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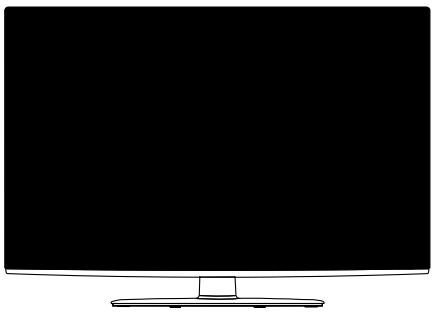
LED LCD TV
SERVICE MANUAL

CHASSIS : LJ01U

MODEL : 37LV3500 37LV3500-SA

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL62886936 (1104-REV00)

Printed in Korea

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

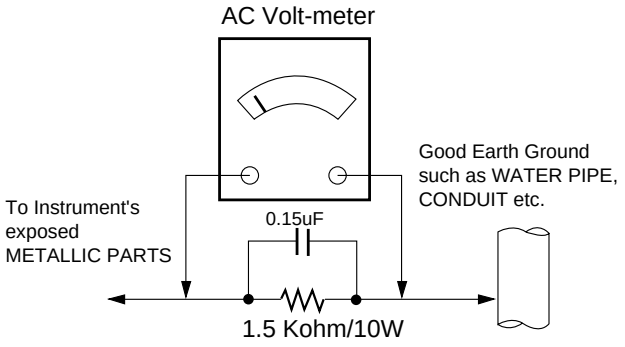
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.
NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
   CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
8. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500°F to 600°F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This spec sheet is applied LCD TV with LJ01U chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

1) Temperature: 25 ºC ± 5 ºC
2) Relative Humidity: 65 ± 10 %
3) Power Voltage : Standard input voltage(100-240V~, 50/60Hz)
   * Standard Voltage of each product is marked by models
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety : UL, CSA, IEC specification
   - EMC: FCC, ICES, IEC specification

4. General Specification(TV)

No	Item	Specification			Remark
1	Receivable System	1) ATSC / NTSC-M			
2	Available Channel	1) VHF : 02 ~ 13 2) UHF : 14 ~ 69 3) DTV : 07 ~ 69 4) CATV : 01 ~ 135			
3	Input Voltage	1) AC 100 - 240V~ 50/60Hz			
4	Market	Central and South AMERICA			
5	Screen Size	26 inch Wide (1366 x 768)			26LK330
		32 inch Wide (1366 x 768)			32LV2500, 32LK330
		32 inch Wide (1920 x 1080)			32LV4500, 32LV3500, 32LV3400, 32LK450, 32LK430
		37 inch Wide (1920 x 1080)			37LV3500, 37LK450
		42 inch Wide (1920 x 1080)			42LV4500, 42LV3500, 42LV3400, 42LK550, 42LK450
		47 inch Wide (1920 x 1080)			47LV3500, 47LK450
		55 inch Wide (1920 x 1080)			55LV3500
6	Aspect Ratio	16:9			
7	Tuning System	FS			
8	LCD Module	T260XW04-V9	HD, 60Hz	AUO	26LK330
		T315XW03-VF	HD, 60Hz	AUO	32LK330
		LC320WXN-SCA2		LGD	
		LC320WXE-SCA1		LGD	
		T315HW04-V9	FHD, 60Hz	AUO	32LK430
		T315HW04-V9	FHD, 60Hz	AUO	32LK450
		LC320WUN-SDA1		LGD	
		LC320WUE-BCA1		LGD	
		T315XW06-V3	HD, 60Hz	AUO	32LV2500
		LC320EXN-SDA1		LGD	
		VVX32H110G00		IPS	
		LC320EUN-SDV2	FHD, 60Hz	LGD	32LV3400
		V315H3-LE7	FHD, 60Hz	CMI	32LV3500
		T315HW07-V8		AUO	
		LC320EUN-SDV2		LGD	
		LC320EUD-SDA1	FHD, 120Hz	LGD	32LV4500
		LC370WUE-SCA1	FHD, 60Hz	LGD	37LK450
		T370HW05-V1	FHD, 60Hz	LGD	37LV3500
		LC370EUN-SDV2		AUO	
		T420HW09-V0	FHD, 60Hz	AUO	42LK450
		LC420WUE-SCA2		LGD	
		LC420WUF-SCA2	FHD, 120Hz	LGD	42LK550
		LC420EUN-SDV3	FHD, 60Hz	LGD	42LV3400, 42LV3500
		T420HW08-V1	FHD, 60Hz	AUO	42LV3500
		LC420EUF-SDA1	FHD, 120Hz	LGD	42LV4500
		LC470WUE-SCA2	FHD, 60Hz	LGD	42LK450
		LC470EUE-SDV1	FHD, 60Hz	LGD	47LV3500
		LC550EUF-SDA1	FHD, 120Hz	LGD	55LV3500
9	Operating Environment	Temp : 0 ~ 40 deg Humidity : ~ 80 %			
10	Storage Environment	Temp : -20 ~ 60 deg Humidity : -85 %			

5. Chrominance & Luminance(37/42LV3500-SA, 42LV3400-SA)

No	Item			Min	Typ	Max	Unit	Remark
1	Max Luminance		Module	290	360		cd/m²	LGD
	(Center 1-point /			320	400		cd/m²	AUO
	Full White Pattern)		SET	250	320		cd/m²	LGD
				280	360		cd/m²	AUO
2	Luminance uniformity			77				
2	Color coordinate	RED	X	Typ.	0.637	Typ.		37LV3500-SA(LGD)
			Y	-0.03	0.341	+0.03		
		GREEN	X		0.319			
			Y		0.605			
		BLUE	X		0.154			
			Y		0.051			
		WHITE	X		0.279			
			Y		0.292			
		RED	X	Typ.	0.637	Typ.		42LV3500-SA/42LV3400-SA(LGD)
			Y	-0.03	0.341	+0.03		
		GREEN	X		0.325			
			Y		0.600			
		BLUE	X		0.152			
			Y		0.051			
		WHITE	X		0.279			
			Y		0.292			
		RED	X	Typ.	0.640	Typ.		37LV3500-SA(AUO)
			Y	-0.03	0.330	+0.03		
		GREEN	X		0.320			
			Y		0.620			
		BLUE	X		0.150			
			Y		0.050			
		WHITE	X		0.279			
			Y		0.292			
		RED	X	Typ.	0.630	Typ.		42LV3500-SA/42LV3400-SA(AUO)
			Y	-0.03	0.330	+0.03		
		GREEN	X		0.320			
			Y		0.620			
		BLUE	X		0.150			
			Y		0.040			
		WHITE	X		0.279			
			Y		0.292			
3.	Contrast ratio			1100/1100	1600/1400			37”/42”(LGD)
				3200	4000			37”/42”(AUO)
4.	Color Temperature	Cool		0.254	0.269	0.284		<Test Condition>
				0.258	0.273	0.288		* The W/B Tolerance is ± 0.015 for
		Standard		0.270	0.285	0.300		Adjustment
				0.278	0.293	0.308		
		Warm		0.298	0.313	0.324		
				0.314	0.329	0.344		

6. Component Video Input (Y, C_B/P_B, C_R/P_R)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed
1.	720*576	15.625	50.000	13.5	SDTV 576I
2.	720*480	15.73	60	13.5135	SDTV ,DVD 480I
3.	720*480	15.73	59.94	13.5	SDTV ,DVD 480I
4.	720*480	31.50	60	27.027	SDTV 480P
5.	720*480	31.47	59.94	27.0	SDTV 480P
6.	720*576	31.250	50.000	27.000	SDTV 576P
7.	1280*720	37.500	50.000	74.25	HDTV 720P
8.	1280*720	45.00	60.00	74.25	HDTV 720P
9.	1280*720	44.96	59.94	74.176	HDTV 720P
10.	1920*1080	28.125	50.00	74.250	HDTV 1080I
11.	1920*1080	33.75	60.00	74.25	HDTV 1080I
12.	1920*1080	33.72	59.94	74.176	HDTV 1080I
13.	1920*1080	56.250	50.00	148.50	HDTV 1080P
14.	1920*1080	67.500	60	148.50	HDTV 1080P
15.	1920*1080	67.432	59.94	148.352	HDTV 1080P
16.	1920*1080	27.000	24.000	74.25	HDTV 1080P
17.	1920*1080	26.97	23.976	74.176	HDTV 1080P
18.	1920*1080	33.75	30.000	74.25	HDTV 1080P
19.	1920*1080	33.71	29.97	740176	HDTV 1080P

7. RGB Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock		Proposed	
	PC					DDC	
1.	640*350	31.468	70.09	25.17		EGA	X
2.	720*400	31.469	70.08	28.32		DOS	O
3.	640*480	31.469	59.94	25.17		VESA(VGA)	O
4.	800*600	37.879	60.31	40.00		VESA(SVGA)	O
5.	1024*768	48.363	60.00	65.00		VESA(XGA)	O
6.	1280*768	47.78	59.870	79.5		CVT(WXGA)	O
7.	1360*768	47.712	60.015	85.50		VESA(WXGA)	O
8.	1280*1024	63.981	60.020	108.00		VESA(SXGA)	O
9.	1920*1080	67.5	60	148.5		HDTV 1080P	O

•RGB PC Monitor Range Limits
Min Vertical Freq - 58 Hz
Max Vertical Freq - 62 Hz
Min Horiz. Freq - 30 kHz
Max Horiz. Freq - 83 kHz
Pixel Clock - 160 MHz

8. HDMI input (PC/DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock		Proposed	
	PC					DDC	
1.	640*350	31.468	70.09	25.17		EGA	X
2.	720*400	31.469	70.08	28.32		DOS	O
3.	640*480	31.469	59.94	25.17		VESA(VGA)	O
4.	800*600	37.879	60.31	40.00		VESA(SVGA)	O
5.	1024*768	48.363	60.00	65.00		VESA(XGA)	O
6.	1360*768	47.712	60.015	85.50		VESA (WXGA)	O
7.	1280*1024	63.981	60.020	108.00		VESA (SXGA)	O
8.	1920*1080	67.500	60.000	148.50		HDTV 1080P	O
	DTV						
1	720*480	31.469	59.940	27.000		SDTV 480P	
2	720*480	31.500	60	27.027		SDTV 480P	
3	720*576	31.250	50.000	27.000		SDTV 576P	
4	1280*720	37.500	50.000	74.25		HDTV 720P	
5	1280*720	45.00	60.00	74.25		HDTV 720P	
6	1280*720	44.96	59.94	74.176		HDTV 720P	
7	1920*1080	28.125	50.000	74.25		HDTV 1080I	
8	1920*1080	33.75	60.00	74.25		HDTV 1080I	
9	1920*1080	33.72	59.94	74.176		HDTV 1080I	
10	1920*1080	56.250	50.000	148.50		HDTV 1080P	
11	1920*1080	67.500	60	148.50		HDTV 1080P	
12	1920*1080	67.432	59.94	148.352		HDTV 1080P	
13	1920*1080	27.000	24.000	74.25		HDTV 1080P	
14	1920*1080	26.97	23.976	74.176		HDTV 1080P	
15	1920*1080	33.75	30.000	74.25		HDTV 1080P	
16	1920*1080	33.71	29.97	74.176		HDTV 1080P	

•HDMI Monitor Range Limits
Min Vertical Freq - 58 Hz Max Vertical Freq - 62 Hz
Min Horiz. Freq - 30 kHz Max Horiz. Freq - 83 kHz
Pixel Clock - 160 MHz

ADJUSTMENT INSTRUCTION

1. Application Range

This specification sheet is applied to all of the LCD TV with LJ01U/LJ01T/LJ01S chassis.

2. Designation

1) The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
2) Power Adjustment: Free Voltage
3) Magnetic Field Condition: Nil.
4) Input signal Unit: Product Specification Standard
5) Reserve after operation: Above 5 Minutes (Heat Run)
   Temperature : at 25 ºC ± 5 ºC
   Relative humidity : 65 % ± 10 %
   Input voltage : 100 ~ 220 V~, 50/60 Hz
6) Adjustment equipments: Color Analyzer(CA-210 or CA-110), DDC Adjustment Jig equipment, Service remote control.
7) Push the “IN STOP” key - For memory initialization.

Case1 : Software version up
1. After downloading S/W by USB, TV set will reboot automatically
2. Push “In-stop” key
3. Push “Power on” key
4. Function inspection
5. After function inspection, Push “In-stop” key.

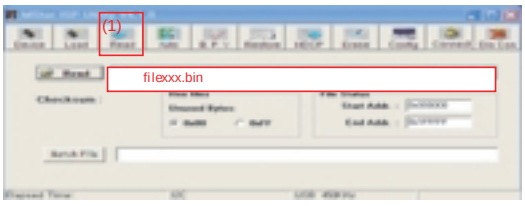
Case2 : Function check at the assembly line
1. When TV set is entering on the assembly line, Push “In-stop” key at first.
2. Push “Power on” key for turning it on.
   -> If you push “Power on” key, TV set will recover channel information by itself.
3. After function inspection, Push “In-stop” key.

3. Main PCB check process

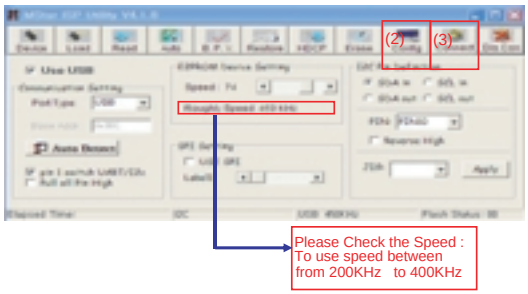
* APC - After Manual-Insult, executing APC

* Boot file Download

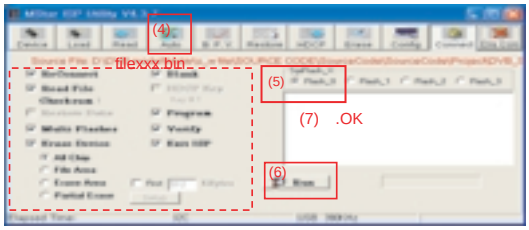
1) Execute ISP program “Mstar ISP Utility” and then click “Config” tab.



2) Set as below, and then click “Auto Detect” and check “OK” message
   If “Error” is displayed, Check connection between computer, jig, and set.
3) Click “Read” tab, and then load download file (XXXX.bin) by clicking “Read”
4) Click “Connect” tab. If “Can’t” is displayed, check connection between computer, jig, and set.

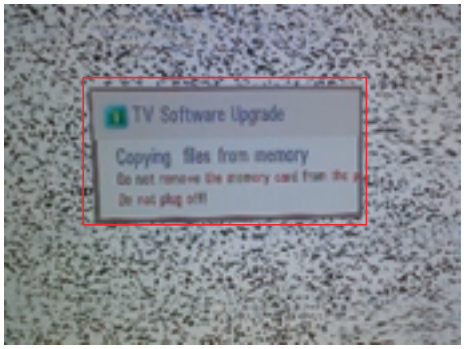


5) Click “Auto” tab and set as below
6) Click “Run”.
7) After downloading, check “OK” message.

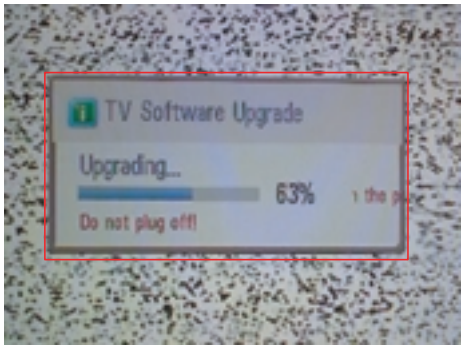


* USB DOWNLOAD

1) Put the USB Stick to the USB socket
2) Automatically detecting update file in USB Stick
   - If your downloaded program version in USB Stick is Low, it didn’t work. But your downloaded version is High, USB data is automatically detecting
3) Show the message “Copying files from memory”



4) Updating is staring.



5) Uploading completed, The TV will restart automatically.
6) If your TV is turned on, check your updated version and Tool option.(explain the Tool option, next stage)
   * If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

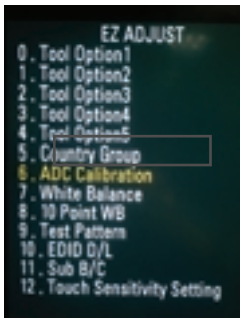
*** After downloading, have to adjust Tool Option again.**

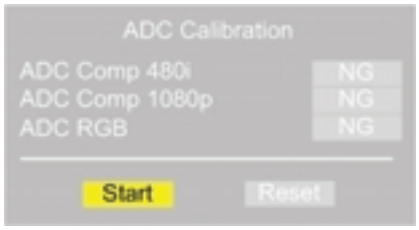
1) Push "IN-START" key in service remote control.
2) Select “Tool Option 1” and Push “OK” button.
3) Punch in the number. (Each model has their number)
4) Completed selecting Tool option.

Module	Module	Tool option1	Tool option2	Tool option3	Tool option4	Tool option5
42LV4500-SA	LGD	26496	19478	55337	10520	8448
32LV4500-SA	LGD	18304	19478	55337	10520	8480
55LV3500-SA	LGD	46944	19478	55337	10520	8448
47LV3500-SA	LGD	34656	19478	55337	10520	256
42LV3500-SA	AUO	26472	19478	55337	10520	352
42LV3500-SA	LGD	26464	19478	55337	10520	288
37LV3500-SA	AUO	22376	19478	55337	10520	352
37LV3500-SA	LGD	22368	19478	55337	10520	288
32LV3500-SA	CMI	18276	19478	55337	10520	352
32LV3500-SA	AUO	18280	19478	55337	10520	352
32LV3500-SA	LGD	18272	19478	55337	10520	288
42LV3400-SA	LGD	26592	9226	53289	10520	288
32LV3400-SA	LGD	18400	9226	53289	10520	288
32LV2500-SA	CMI	18212	19478	55337	10520	352
32LV2500-SA	AUO	18216	19478	55337	10520	352
32LV2500-SA	LGD	18208	19478	55337	10520	288
26LV2500-SA	AUO	14120	8714	55337	10520	288
26LV2500-SA	LGD	14112	8714	55337	10520	288
22LV2500-SA	CMI	10020	8714	55337	10520	288
22LV2500-SA	AUO	10024	8714	55337	10520	288
19LV2500-SA	AUO	5928	8714	55337	10520	288
19LV2500-SA	CMI	5924	8714	55337	10520	288
19LV2500-SA	LGD	5920	8714	55337	10520	288
47LK450-SA	LGD	34432	18966	55305	10520	8450
42LK450-SA	LGD	26240	18966	55305	10520	8450
42LK450-SA	AUO	26248	18966	55305	10520	290
37LK450-SA	LGD	22144	18966	55305	10520	8450
37LK450-SA	AUO	22152	18966	55305	10520	290
32LK450-SA	AUO	18056	18966	55305	10520	290
32LK450-SA	LGD	18048	18966	55305	10520	8482
32LK450-SA	LGD (CoMS)	18048	18966	55305	10520	8450
32LK430-SA	AUO	18024	18966	51209	10520	290
32LK330-SB	AUO	17992	18966	51209	10520	290
32LK330-SB	LGD	17984	18966	51209	10520	290
32LK330-SB	LGD (CoMS)	17984	18966	51209	10520	258
26LK330-SB	AUO	13896	18966	51209	10520	290

3.1. ADC Process

(1) ADC
- Enter Service Mode by pushing “ADJ” key,
- Enter Internal ADC mode by pushing “$_{G}$” key at “6. ADC Calibration”





<Caution> Using ‘power on’ button of the Adjustment R/C, power on TV.

* ADC Calibration Protocol (RS232)

No	Item	CMD1	CMD2	Data0		
Enter Adjust Mode	Adjust ‘Mode In’	A	A	0	0	When transfer the ‘Mode In’, Carry the command.
ADC adjust	ADC Adjust	A	D	1	0	Automatically adjustment (The use of a internal pattern)

Adjust Sequence
- aa 00 00 [Enter Adjust Mode]
- xb 00 40 [Component1 Input (480i)]
- ad 00 10 [Adjust 480i Comp1]
- xb 00 60 [RGB Input (1024*768)]
- ad 00 10 [Adjust 1024*768 RGB]
- aa 00 90 End Adjust mode

* Required equipment : Adjustment R/C.

3.2. Function Check

* Check display and sound
- Check Input and Signal items. (cf. work instructions)
  1) TV
  2) AV (SCART1/SCART2/ CVBS)
  3) COMPONENT (480i)
  4) RGB (PC : 1024 x 768 @ 60hz)
  5) HDMI
  6) PC Audio In
  * Display and Sound check is executed by Remote control.

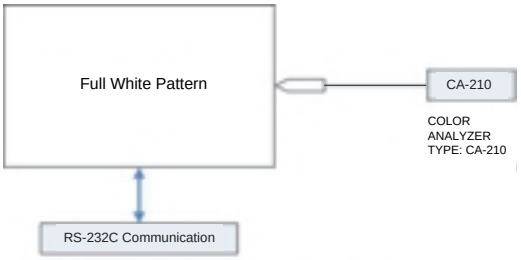
4. Total Assembly line process

4.1. Adjustment Preparation

· W/B Equipment condition
CA210 : CH 9, Test signal : Inner pattern (85IRE)
· Above 5 minutes H/run in the inner pattern. (“power on” key of adjust remote control)

Cool	13,000	K	X=0.269(±0.002)	
			Y=0.273(±0.002)	<Test Signal>
Medium	9,300	K	X=0.285(±0.002)	Inner pattern
			Y=0.293(±0.002)	(216gray,85IRE)
Warm	6,500	K	X=0.313(±0.002)	
			Y=0.329(±0.002)	

* Connecting picture of the measuring instrument
(On Automatic control)
Inside PATTERN is used when W/B is controlled. Connect to auto controller or push Adjustment R/C POWER ON -> Enter the mode of White-Balance, the pattern will come out.



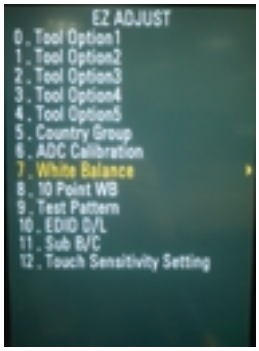
* Auto-control interface and directions
1) Adjust in the place where the influx of light like floodlight around is blocked. (illumination is less than 10 lux).
2) Adhere closely the Color Analyzer (CA210) to the module less than 10 cm distance, keep it with the surface of the Module and Color Analyzer’s prove vertically.(80° ~ 100°).
3) Aging time
- After aging start, keep the power on (no suspension of power supply) and heat-run over 5 minutes.
- Using ‘no signal’ or ‘full white pattern’ or the others, check the back light on.

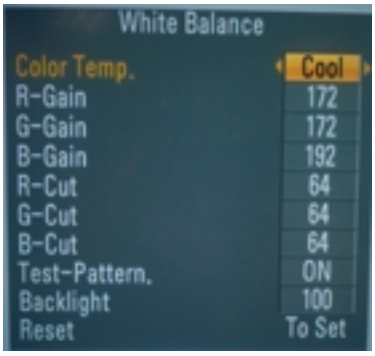
• Auto adjustment Map(RS-232C)
RS-232C COMMAND
[CMD ID DATA]
Wb 00 00 White Balance Start
Wb 00 ff White Balance End

	RS-232C COMMAND [CMD ID DATA]			MIN	CENTER (DEFAULT)			MAX
	Cool	Mid	Warm		Cool	Mid	Warm	
R Gain	jg	Ja	jd	00	172	192	192	192
G Gain	jh	Jb	je	00	172	192	192	192
B Gain	ji	Jc	jf	00	192	192	172	192
R Cut					64	64	64	128
G Cut					64	64	64	128
B Cut					64	64	64	128

<Caution>
Color Temperature : COOL, Medium, Warm.
One of R Gain/G Gain/ B Gain should be kept on 0xC0, and adjust other two lower than C0.
(when R/G/B Gain are all C0, it is the FULL Dynamic Range of Module)

* Manual W/B process using adjusts Remote control.
• After enter Service Mode by pushing “ADJ” key,
• Enter White Balance by pushing “G” key at “6. White Balance”.





* After done all adjustments, Press “In-start” button and compare Tool option and Area option value with its BOM, if it is correctly same then unplug the AC cable. If it is not same, then correct it same with BOM and unplug AC cable. For correct it to the model’s module from factory Jig model.
* Push the “IN STOP” key after completing the function inspection. And Mechanical Power Switch must be set “ON”.

4.2. DDC EDID Write (RGB 128Byte)

• Connect D-sub Signal Cable to D-sub Jack.
• Write EDID Data to EEPROM(24C02) by using DDC2B protocol.
• Check whether written EDID data is correct or not.
* For SVC main Assembly, EDID have to be downloaded to Insert Process in advance.

4.3. DDC EDID Write (HDMI 256Byte)

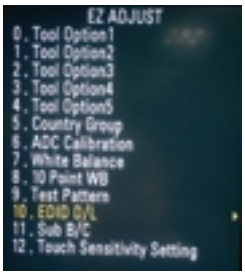
• Connect HDMI Signal Cable to HDMI Jack.
• Write EDID Data to EEPROM(24C02) by using DDC2B protocol.
• Check whether written EDID data is correct or not.
* For SVC main Assembly, EDID have to be downloaded to Insert Process in advance.

4.4. EDID DATA

1) All Data : HEXA Value
2) Changeable Data :
*: Serial No : Controlled / Data:01
**: Month : Controlled / Data:00
***:Year : Controlled
****:Check sum

4.5. Auto Download

1) Press Adj. key on the Adj. Remote control.
2) Select EDID D/L menu.
3) By pressing Enter key, EDID download will begin
4) If Download is successful, OK is display, but If Download if failure, NG is displayed.
5) If Download is failure, Re-try downloads.



* Edid data and Model option download (RS232)

NO	Item	CMD1	CMD2	Data0		
Enter download Mode	Download 'Mode In'	A	A	0	0	When transfer the 'Mode In', Carry the command.
EDID data and Model option download	Download	A	E	00	10	Automatically Download (The use of a internal pattern)

- Manual Download

* Caution
1) Use the proper signal cable for EDID Download
   - Analog EDID : Pin3 exists
   - Digital EDID : Pin3 exists
2) Never connect HDMI & D-sub Cable at the same time.
3) Use the proper cables below for EDID Writing
4) Download HDMI1, HDMI2, separately because HDMI1 is different from HDMI2

For Analog EDID	For HDMI EDID
D-sub to D-sub	DVI-D to HDMI or HDMI to HDMI
	 

Item	Condition	Data(Hex)
Manufacturer ID	GSM	1E6D
Version	Digital : 1	01
Revision	Digital : 3	03

1) FHD RGB EDID data(Check sum:1C)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	68	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C	
0040	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0060	3E	1E	53	10	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	1C

2) FHD HDMI EDID data
HDMI 1 (Check sum:E2, 99)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	71	4F	81	80	01	01	01	01	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	1B	21	50	A0	51	00	1E	30
0050	48	88	35	00	A0	5A	00	00	00	1C	00	00	00	FD	00	3A
0060	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E2
0080	02	03	26	F1	4E	10	1F	04	13	05	14	03	02	12	20	21
0090	22	15	01	26	15	07	50	09	57	07	67	03	0C	00	10	00
00A0	B8	2D	E3	05	03	01	01	1D	80	18	71	1C	16	20	58	2C
00B0	25	00	A0	5A	00	00	00	9E	01	1D	00	72	51	D0	1E	20
00C0	6E	28	55	00	A0	5A	00	00	00	1E	02	3A	80	18	71	38
00D0	2D	40	58	2C	45	00	A0	5A	00	00	00	1E	01	1D	00	BC
00E0	52	D0	1E	20	B8	28	55	40	A0	5A	00	00	00	1E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	99

HDMI 2 (Check sum:E2, 89)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	71	4F	81	80	01	01	01	01	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	1B	21	50	A0	51	00	1E	30
0050	48	88	35	00	A0	5A	00	00	00	1C	00	00	00	FD	00	3A
0060	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E2
0080	02	03	26	F1	4E	10	1F	04	13	05	14	03	02	12	20	21
0090	22	15	01	26	15	07	50	09	57	07	67	03	0C	00	20	00
00A0	B8	2D	E3	05	03	01	01	1D	80	18	71	1C	16	20	58	2C
00B0	25	00	A0	5A	00	00	00	9E	01	1D	00	72	51	D0	1E	20
00C0	6E	28	55	00	A0	5A	00	00	00	1E	02	3A	80	18	71	38
00D0	2D	40	58	2C	45	00	A0	5A	00	00	00	1E	01	1D	00	BC
00E0	52	D0	1E	20	B8	28	55	40	A0	5A	00	00	00	1E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	89

HDMI 3 (Check sum:E2, 79)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	71	4F	81	80	01	01	01	01	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	1B	21	50	A0	51	00	1E	30
0050	48	88	35	00	A0	5A	00	00	00	1C	00	00	00	FD	00	3A
0060	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E2
0080	02	03	26	F1	4E	10	1F	04	13	05	14	03	02	12	20	21
0090	22	15	01	26	15	07	50	09	57	07	67	03	0C	00	30	00
00A0	B8	2D	E3	05	03	01	01	1D	80	18	71	1C	16	20	58	2C
00B0	25	00	A0	5A	00	00	00	9E	01	1D	00	72	51	D0	1E	20
00C0	6E	28	55	00	A0	5A	00	00	00	1E	02	3A	80	18	71	38
00D0	2D	40	58	2C	45	00	A0	5A	00	00	00	1E	01	1D	00	BC
00E0	52	D0	1E	20	B8	28	55	40	A0	5A	00	00	00	1E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	79

3) HD RGB EDID data(Check sum:CD)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	68	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	C0	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
0040	35	00	A0	5A	00	00	00	1C	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0060	3E	1F	46	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	CD
0080	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0090	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00A0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00B0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00C0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00D0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00E0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
00F0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

4) HD HDMI EDID data
HDMI 1 (Check sum:B4, 65)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	C0	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
0040	35	00	A0	5A	00	00	00	1C	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0060	3E	1F	46	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	B4
0080	02	03	20	F1	4E	10	1F	84	13	05	14	03	02	12	20	21
0090	22	15	01	26	15	07	50	09	57	07	65	03	0C	00	10	00
00A0	01	1D	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00	00
00B0	00	9E	01	1D	00	80	51	D0	0C	20	40	80	35	00	A0	5A
00C0	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
00D0	A0	5A	00	00	00	18	02	3A	80	18	71	38	2D	40	58	2C
00E0	45	00	A0	5A	00	00	00	1E	01	1D	80	D0	72	1C	16	20
00F0	10	2C	25	80	A0	5A	00	00	00	9E	00	00	00	00	00	65

HDMI 2 (Check sum:B4, 55)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	C0	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
0040	35	00	A0	5A	00	00	00	1C	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0060	3E	1F	46	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	B4
0080	02	03	20	F1	4E	10	1F	84	13	05	14	03	02	12	20	21
0090	22	15	01	26	15	07	50	09	57	07	65	03	0C	00	20	00
00A0	01	1D	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00	00
00B0	00	9E	01	1D	00	80	51	D0	0C	20	40	80	35	00	A0	5A
00C0	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
00D0	A0	5A	00	00	00	18	02	3A	80	18	71	38	2D	40	58	2C
00E0	45	00	A0	5A	00	00	00	1E	01	1D	80	D0	72	1C	16	20
00F0	10	2C	25	80	A0	5A	00	00	00	9E	00	00	00	00	00	55

HDMI 3 (Check sum:B4, 45)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	C0	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
0040	35	00	A0	5A	00	00	00	1C	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0060	3E	1F	46	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	B4
0080	02	03	20	F1	4E	10	1F	84	13	05	14	03	02	12	20	21
0090	22	15	01	26	15	07	50	09	57	07	65	03	0C	00	30	00
00A0	01	1D	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00	00
00B0	00	9E	01	1D	00	80	51	D0	0C	20	40	80	35	00	A0	5A
00C0	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
00D0	A0	5A	00	00	00	18	02	3A	80	18	71	38	2D	40	58	2C
00E0	45	00	A0	5A	00	00	00	1E	01	1D	80	D0	72	1C	16	20
00F0	10	2C	25	80	A0	5A	00	00	00	9E	00	00	00	00	00	45

- Model List

HD(CCFL)	FHD(CCFL)	HD(LED)	FHD Small(LED)	FHD(LED)
32LK330-SB	32LK450-SA	19LV2500-SA		32LV4500-SA
	37LK450-SA	22LV2500-SA		42LV4500-SA
	42LK450-SA	26LV2500-SA		32LV3500-SA
	47LK450-SA	32LV2500-SA		37LV3500-SA
	32LK430-SA			42LV3500-SA
				47LV3500-SA
				55LV3500-SA

4.5. Outgoing condition Configuration

- When pressing IN-STOP key by SVC remocon, Red LED are blinked alternatively. And then Automatically turn off. (Must not AC power OFF during blinking)

4.6. Hi-pot Test

Confirm whether is normal or not when between power board's ac block and GND is impacted on 1.5 kV/min at 100mA(GND) and 3kV/min at 100mA(Signal)

S7M-PLUS_DivX_MS10

LGE107DC-RP [S7M+ DIVX/MS10]

NAND FLASH MEMORY

IC102
NAND1GW3B2CN6E

NAND_FLASH_1G_NUMONYX
EAN60762401

+3.3V_Normal

/PF_CE0
H : Serial Flash
L : NAND Flash
/PF_CE1
H : 16 bit
L : 8 bit

/F_RB
/PF_OE
/PF_CE0
/PF_WP
/PF_CE1
PF_ALE
/PF_WE

R107 1K
R109 3.9K
R108 1K OPT
C101 0.1uF
R105 1K OPT
R104 10K OPT
R106
R102 3.9K
Q101 KRC103S OPT

AR101 22
AR102 22
C102 10uF
C103 0.1uF

PCM_A[0-7]
PCM_A[7]
PCM_A[6]
PCM_A[5]
PCM_A[4]
PCM_A[3]
PCM_A[2]
PCM_A[1]
PCM_A[0]

<T3 CHIP Config(AUD_LRCH)>

Boot from SPI flash : 1'b0
Boot from NOR flash : 1'b1

<T3 CHIP Config>
(AUD_SCK, AUD_MASTER_CLK, PWM1, PWM0)

MIPS_no_EJ_NOR8 : 4'h3 (MIPS as host. No EJ PAD. Byte mode NAND flash.)
MIPS_EJ1_NOR8 : 4'h4 (MIPS as host. EJ use PAD1. Byte mode NAND flash)
MIPS_EJ2_NOR8 : 4'h5 (MIPS as host. EJ use PAD2. Byte mode NAND flash.)
B51_Secure_no scramble : 4'hb (8051 as host. Internal SPI flash secure boot, no scramble)
B51_Sesure_scramble : 4'hc (8051 as host. Internal SPI flash secure boot with scarmble)

+3.3V_Normal
AUD_MASTER_CLK
R148 56
C112 100pF 50V
R115 1K
R117 1K
R123 1K OPT
R125 1K OPT
R116 1K
R118 1K OPT
R121 1K
R124 1K
R126 1K
AUD_LRCH
AUD_SCK
AUD_MASTER_CLK_0
PWM1
PWM0

IC101

PCM_D[0-7]
PCM_A[0-14]
PCM_REG
PCM_OE
PCM_WE
PCM_IORD
PCM_IOWR
PCM_CE
PCM_IRQA
PCM_CD
PCM_WAIT
PCM_RST
/PF_CE0
/PF_CE1
/PF_OE
/PF_WE
PF_ALE
/PF_WP
/F_RB
S7_NEC_TXD
S7_NEC_RXD
I2C_SDA
I2C_SCL
RGB_DDC_SDA
RGB_DDC_SCL
PWM0
PWM1
PWM2
SC_RE2
SC_RE1
DSUB_DET
MODEL_OPT_3
PCM_5V_CTL
/RST-PHY

+5V_Normal
R132 10K
R133 10K
C108 0.1uF OPT
C109 0.1uF
AR104 22
AR103 22
R134 22
R135 22
R136 22
R137 22
R138 22
R139 22

for SYSTEM/HDCP EEPROM&URSA3
TO SCART1

PCM_D0 U22
PCM_D1 T21
PCM_D2 T22
PCM_D3 AB18
PCM_D4 AC18
PCM_D5 AC19
PCM_D6 AC20
PCM_D7 AC21
PCM_A0 U21
PCM_A1 V21
PCM_A2 Y22
PCM_A3 AA22
PCM_A4 R22
PCM_A5 R21
PCM_A6 T23
PCM_A7 T24
PCM_A8 AA23
PCM_A9 Y20
PCM_A10 AB17
PCM_A11 AA21
PCM_A12 U23
PCM_A13 Y23
PCM_A14 W23
W22
PCM_REG_N
AA17
PCM_OE_N V22
PCM_WE_N W21
PCM_IORD_N Y21
PCM_IOWR_N
AA20
PCM_CE_N V23
PCM_IRQA_N P23
PCM_CD_N R23
PCM_WAIT_N P22
PCM_RESET
AC17
PCM_PF_CE0Z AB20
PCM_PF_CE1Z AA18
PCM_PF_OEZ AB21
PCM_PF_WEZ AB19
PCM_PF_ALE AD17
PCM_PF_AD[15] AA19
PCM_PF_RBZ
M23
UART_TX2/GPIO65 N23
UART_RX2/GPIO64
DDCR_DA/GPIO71 M22
DDCR_CK/GPIO72 N22
DDCA_DA/UART0_TX A5
DDCA_CK/UART0_RX B5
K23
PWM0/GPIO66 K22
PWM1/GPIO67 G23
PWM2/GPIO68 G22
PWM3/GPIO69 G21
PWM4/GPIO70
C6
SAR0/GPIO31 B6
SAR1/GPIO32 C8
SAR2/GPIO33 C7
SAR3/GPIO34 A6
SAR4/GPIO35

GPIO143/TCON0 N21
GPIO145/TCON2 M21
GPIO147/TCON4 L22
GPIO149/TCON6 L21
GPIO151/TCON8 P21
5V_DET_HDMI_1
5V_DET_HDMI_2
5V_DET_HDMI_4
SIDEAV_DET

Delete Wireless

GPIO36/UART3_RX K21
GPIO37/UART3_TX L23
GPIO38 K20
GPIO39 L20
GPIO40 M20
GPIO41 G20
GPIO42 G19
ET_RXER
FRC_RESET
SC1/COMP1_DET
ERROR_OUT
MODEL_OPT_0

GPIO50/UART1_RX F20
GPIO51/UART1_TX F19

GPIO6/PM0/INT0 E7
GPIO7/PM1/PM_UART_TX D7
GPIO8/PM2 E11
GPIO9/PM3 G9
GPIO10/PM4 F9
GPIO11/PM5/PM_UART_RX/INT1 C5
USB1_OCD
USB1_CTL
HP_DET
CONTROL_ATTEN
MODEL_OPT_6
MODEL_OPT_1

PM_SPI_CS1/GPIO12/PM6 E8 33 R146
PM_SPI_WP1/GPIO13/PM7 E9
PM_SPI_WP2/GPIO14/PM8/INT2 F7
GPIO15/PM9 F6
PM_SPI_CS2/GPIO16/PM10 D8
GPIO17/PM11/INT3 G12
GPIO18/PM12/INT4 F10
/FLASH_WP
MODEL_OPT_2
TUNER_RESET
DEMOD_RESET
AV_CVBS_DET

PM_SPI_CK/GPIO1 D9 33 R147
PM_SPI_CZ/GPIO0 D11
PM_SPI_DI/GPIO2 E10
PM_SPI_DO/GPIO3 D10 33 R151
SPI_SCK
/SPI_CS
SPI_SDI
SPI_SDO
for SERIAL FLASH

TS0_CLK AA9
TS0_VLD AA5
TS0_SYNC AA10
CI_TS_CLK
CI_TS_VAL
CI_TS_SYNC
CI_TS_DATA[0-7]
from CI SLOT

TS0_D0 AB5 CI_TS_DATA[0]
TS0_D1 AC4 CI_TS_DATA[1]
TS0_D2 Y6 CI_TS_DATA[2]
TS0_D3 AA6 CI_TS_DATA[3]
TS0_D4 W6 CI_TS_DATA[4]
TS0_D5 AA7 CI_TS_DATA[5]
TS0_D6 Y9 CI_TS_DATA[6]
TS0_D7 AA8 CI_TS_DATA[7]

TS1_CLK AC5
TS1_VLD AC6
TS1_SYNC AB6
FE_TS_CLK
FE_TS_VAL_ERR
FE_TS_SYNC
FE_TS_DATA[7-0]
Internal demod out /External demod in

TS1_D0 AC10 FE_TS_DATA[0]
TS1_D1 AB10 FE_TS_DATA[1]
TS1_D2 AC9 FE_TS_DATA[2]
TS1_D3 AB9 FE_TS_DATA[3]
TS1_D4 AC8 FE_TS_DATA[4]
TS1_D5 AB8 FE_TS_DATA[5]
TS1_D6 AC7 FE_TS_DATA[6]
TS1_D7 AB7 FE_TS_DATA[7]

MPIF_CLK D12
MPIF_CS_N D14
MPIF_BUSY E14
MPIF_D0 E12
MPIF_D1 F12
MPIF_D2 D13
MPIF_D3 E13
R160 1K
Delete /PIF_SPI_CS

NAND_FLASH_1G_HYNIX
EAN35669102
IC102-*1
H27U1G8F2BTR-BC

NAND_FLASH_1G_SS
EAN61857001
IC102-*2
K9F1G08U0D-SCB0

NAND_FLASH_1G_TOSHIBA
EAN61508001
IC102-*3
TC58NVG0S3ETA0BBBH

S7R

S7R_BASIC | S7R_MS10 | S7R_DivX | S7R_DivX_MS10 | S7R_RM

S7MR

S7MR_BASIC | S7MR_MS10 | S7MR_DivX | S7MR_DivX_MS10 | S7MR_RM

S7MR-PLUS

S7M-PLUS_BASIC | S7M-PLUS_MS10 | S7M-PLUS_DivX | S7M-PLUS_RM

FRC_SCL
FRC_SDA

EEPROM_1MBIT_ATMEL
IC104-*1
AT24C1024BN-SH-T

NC A1 A2 GND VCC WP SCL SDA

HDCP EEPROM

IC103
CAT24WC08W-T
Addr:10101--
+3.3V_Normal
R113 4.7K
A0 A1 A2 VSS VCC WP SCL SDA
C107 0.1uF
R127 4.7K
R128 22
R129 22
I2C_SCL
I2C_SDA

EEPROM

EEPROM_1MBIT_ST
IC104
M24M01-HRMN6TP
A0'h
+3.3V_Normal
C105 0.1uF
E1 E2 VSS VCC WP SCL SDA
R111 22
R112 22
C104 8pF OPT
C106 8pF OPT

I2C

+3.3V_Normal
R140 R141 R142 3.3K R143 3.3K R144 R145 R146
AMP_SDA
AMP_SCL
I2C_SDA
I2C_SCL
NEC_SDA
NEC_SCL

DIMMING

A_DIM R156 10K PWM0
PWM_DIM R157 100 PWM2
R155 0
C111 2.2uF OPT
LD650 Scan
SCAN_BLK2 R158 100 OPT FRC_PWM1
SCAN_BLK1/OPC_OUT R159 100 OPT FRC_PWM0

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
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LG ELECTRONICS

MODEL	GP3_Saturn7M	DATE	Ver. 0.1
BLOCK	FLASH/EEPROM/GPIO	SHEET	1 /

MODEL OPTION

PIN NAME	PIN NO.	LOW	HIGH
MODEL_OPT_0	G19	NO FRC	FRC
MODEL_OPT_4	E18	50/60Hz LVDS	100/120Hz LVDS
MODEL_OPT_1	C5	PHM_OFF	PHM_ON
MODEL_OPT_2	F7	2D	3D
MODEL_OPT_3	B6	HD	FHD
MODEL_OPT_5	D18	Ready	default
MODEL_OPT_6	F9	LCD	OLED

NO_FRC (OPT_0 : LOW, OPT_4 : LOW)
U3_INTERNAL (OPT_0 : HIGH, OPT_4 : LOW)
U5_EXTERNALBOOT (OPT_0 : HIGH, OPT_4 : HIGH)
reserved for FRC (OPT_0 : LOW, OPT_4 : HIGH)

--> This option is only applied in EU.
In case of NON_EU, default value set LOW.

-->In case of GP2, This port was used for GIP/NON_GIP

RSDS Power OPT

VDDC 1.26V

Normal Power 3.3V

Normal 2.5V

DDR3 1.5V

RSDS Power OPT

S7M-PLUS_DivX_MS10
IC101
LGE107DC-RP [S7M+ DIVX/MS10]

HDMI

DSUB

SCART1_RGB/COMP1

COMP2

CVBS In/OUT

Close to MSTAR

ANALOG SIF
Close to MSTAR

DTV_IF

TU/DEMOD_I2C

B/T USB

SIDE USB

I2S_I/F

AUDIO IN

AUDIO OUT

H/P OUT

Delete CHB_CVBS_IN

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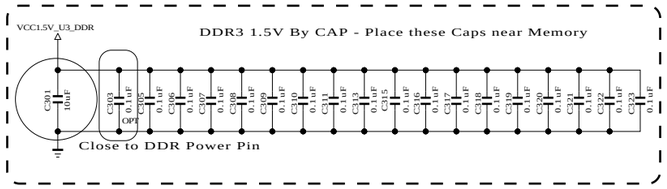
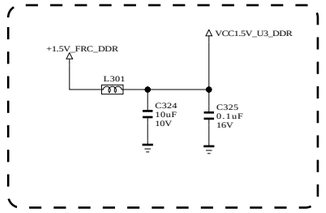
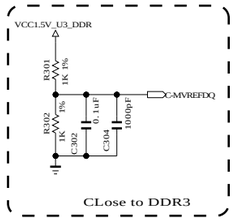
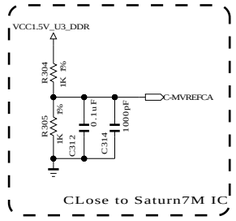
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	MAIN2, HW OPT	SHEET	2



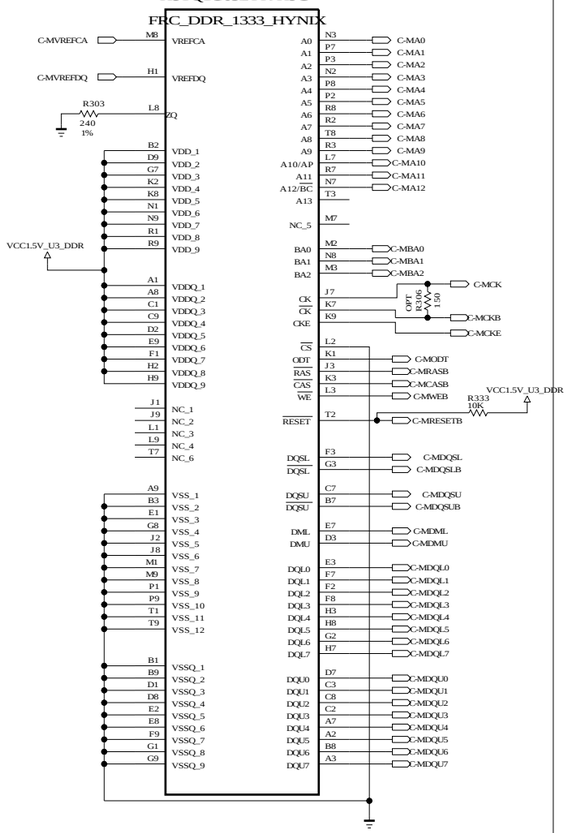


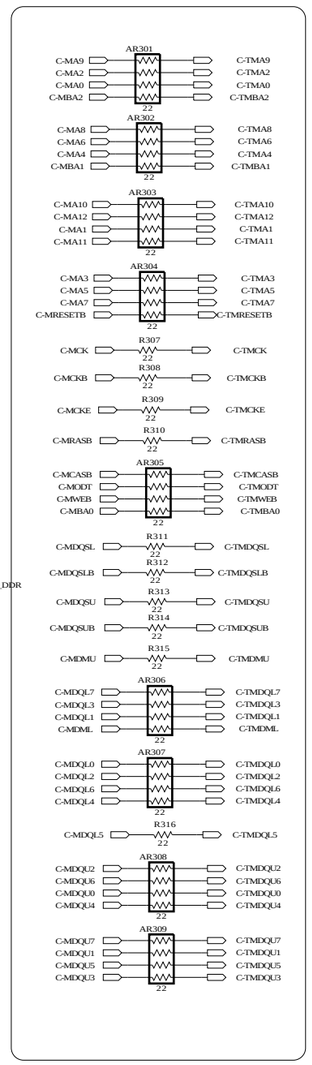




EAN61828901

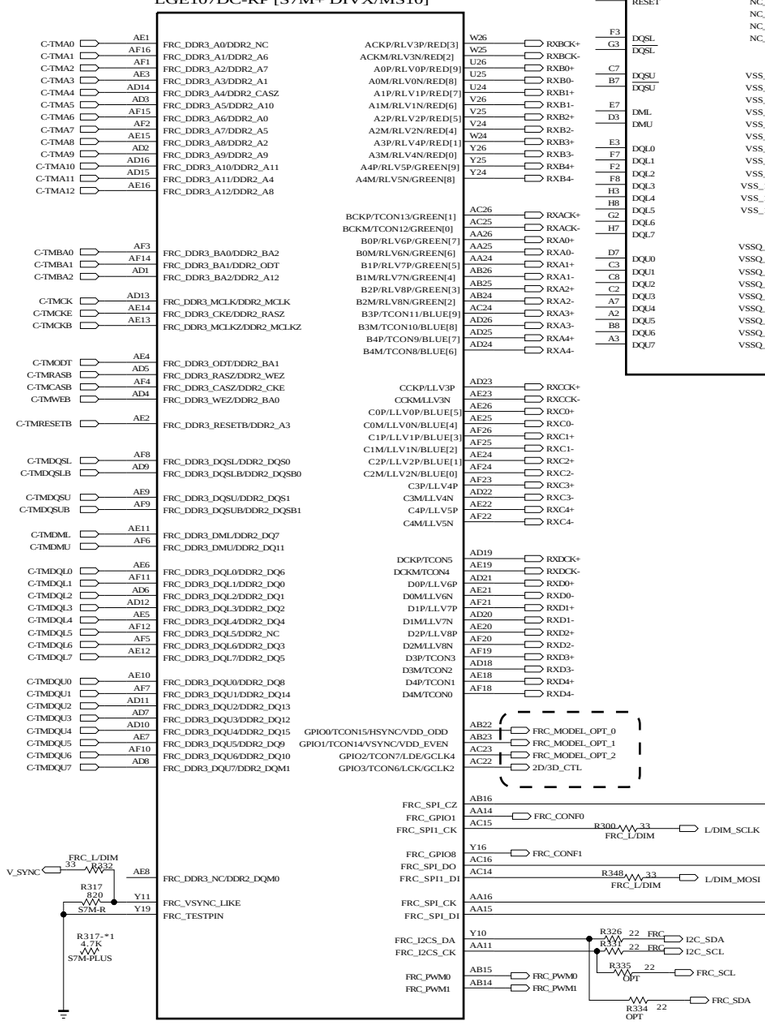
IC301
H5TQ1G63DFR-H9C





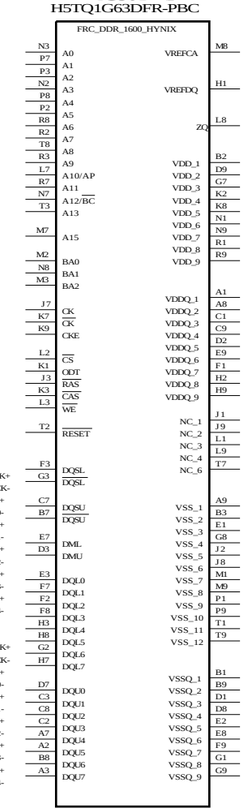
S7M-PLUS_DivX_MS10

IC101
LGE107DC-RP [S7M+ DIVX/MS10]



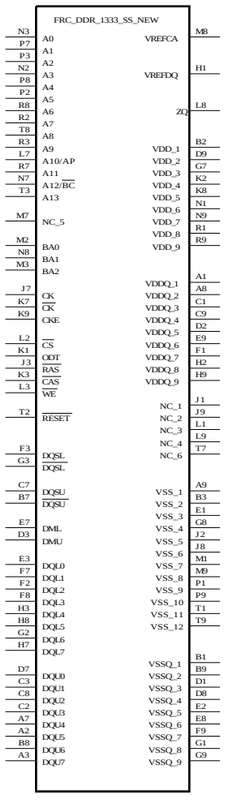
EAN61829001

IC301-*2
H5TQ1G63DFR-PBC



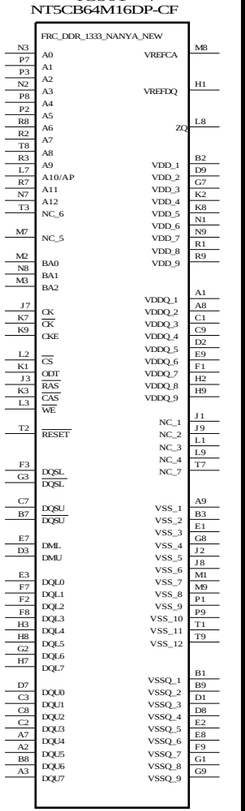
EAN61857101

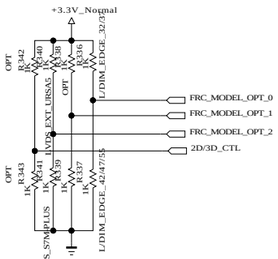
IC301-*3
K4B1G1646G-BCH9

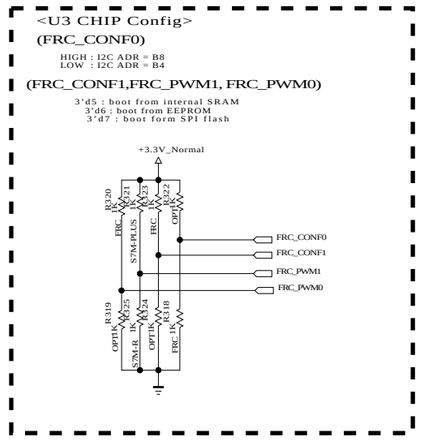


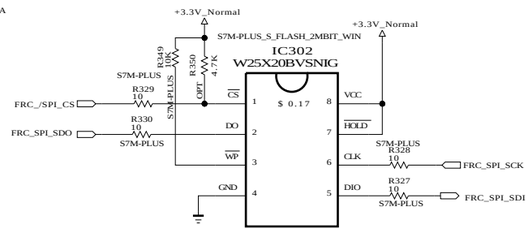
EAN61857201

IC301-*4
NT5CB64M16DP-CF









THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

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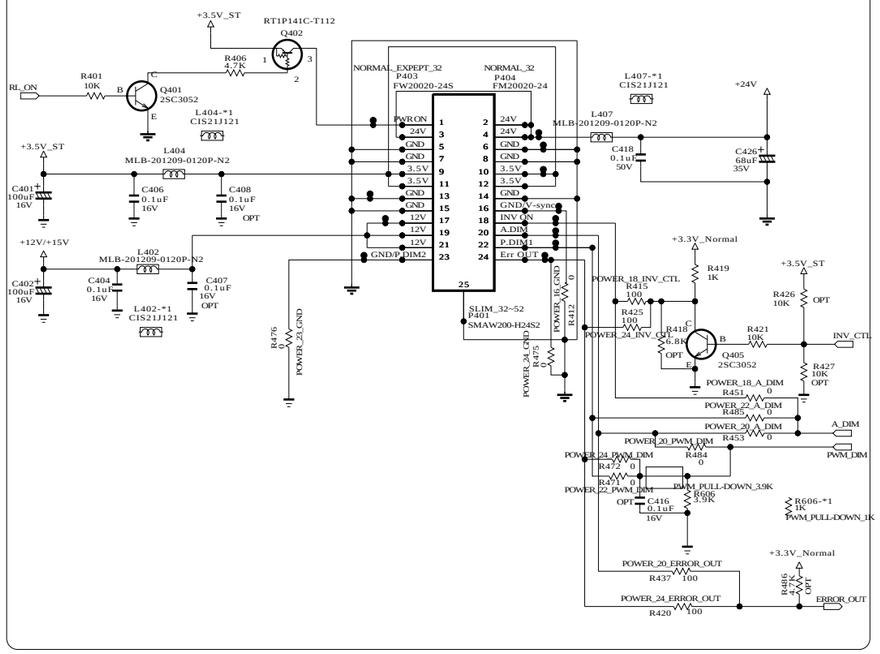
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	FRC_DDR	SHEET	3

FROM LIPS & POWER B/D



<MODULE PIN MAP>

PIN No	LGD(PSU) or LIPS	CMO10"Lamp (PSU)	AUO 10"Lamp (PSU)	SHARP (PSU)	IPS-@ (PSU)
16	GND	GND	GND	GND	GND
18	INV_ON	A-DIM	INV_ON	INV_ON	INV_ON
20	VBR-A	NC	Err_out	52/60:ERROR 26/32HD:NC	Err_out
22	PWM_DIM	PWM_DIM	NC	26/32/52:PWM 60:NC	NC
24	Err_out	INV_ON	PWM_DIM	26/32/52:GND 60:PWM	PWM_DIM
23	GND	GND	GND	GND	GND

<LED MODULE PIN MAP -> latest update 20100618>

PIN No	LGD LPB / OS LPB	32LE5300-TA CMO10"LED (PSU)	32LE4500-TA AUO 10"LED (PSU)	32LE5300-TA LGD 10"LED (PSU)	
16	NC	NC	NC	NC	
18	INV_ON	INV_ON	INV_ON	INV_ON	
20	NC	err_out --> NC	err_out --> NC	NC	
22	PWM_DIM	NC	NC	PWM_DIM	
24	err_out --> NC	PWM_DIM	PWM_DIM	err_out --> NC	
23	NC	NC	NC	NC	

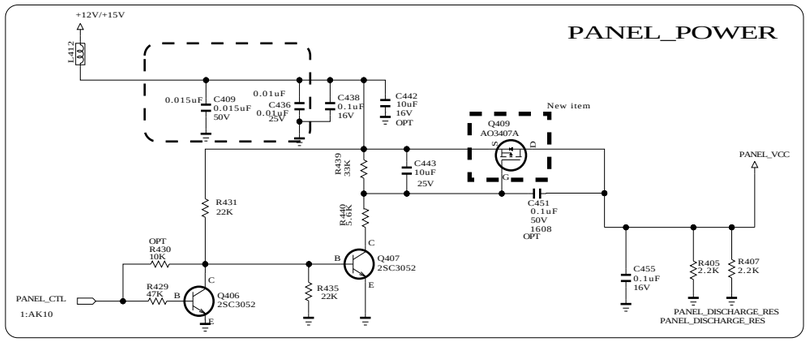
LGD edge led error-out use or not? checking is necessary...

TP5302 OLP
TP5303 V_SYNC
TP5304 SCAN_BLK2
TP5305 SCAN_BLK1/OPC_OUT
TP5306 OPC_OUT

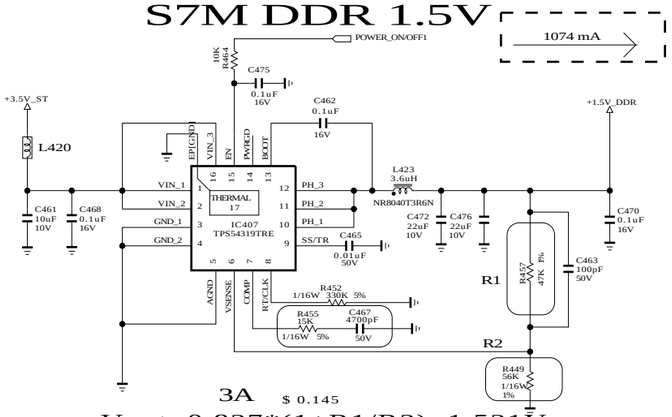
<Module Inv to Main Pin Connection>

INV <--> MAIN
#11 <--> #24
#12 <--> #18
#13 <--> #20
#14 <--> #22

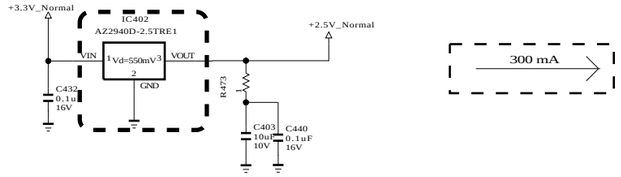
PANEL_POWER



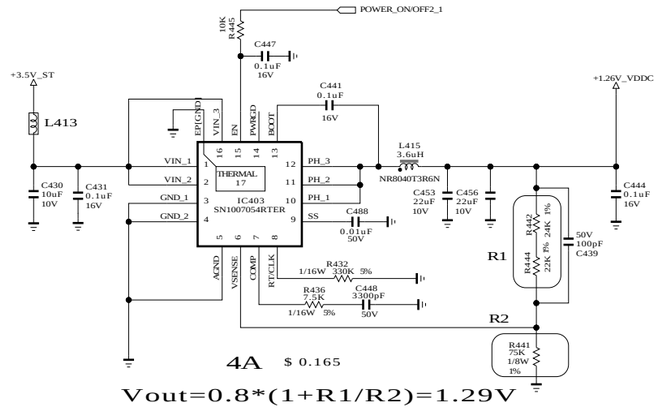
S7M DDR 1.5V



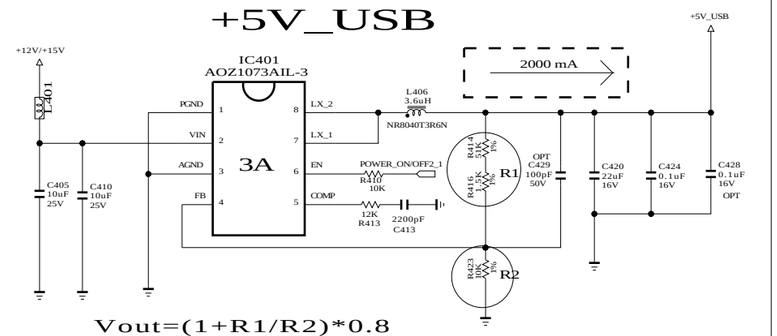
+2.5V/+1.8V



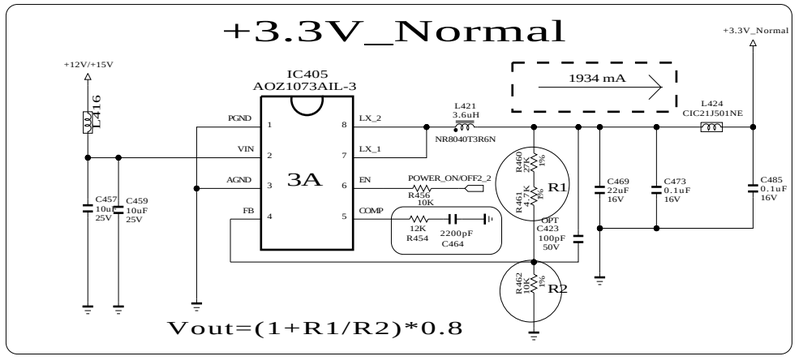
S7M core 1.26V volt



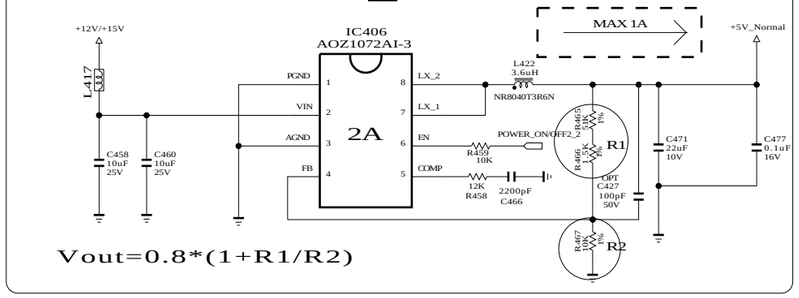
+5V_USB



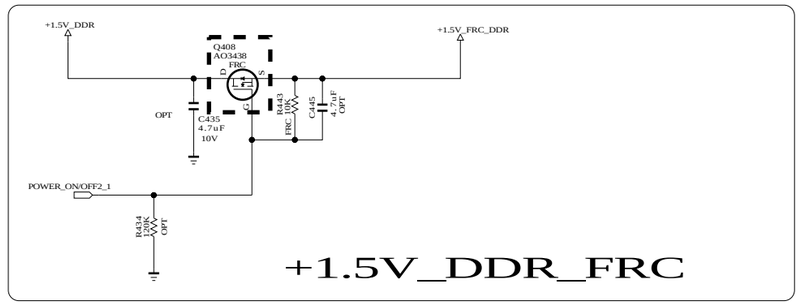
+3.3V_Normal



+5V_Normal



+1.5V_DDR_FRC



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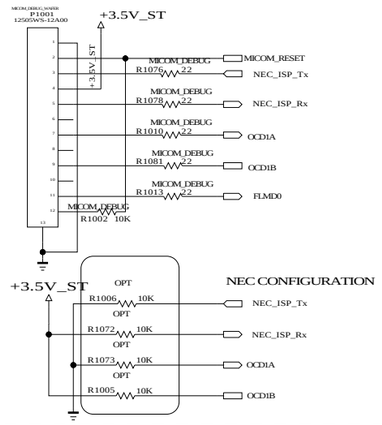
SECRET
LGElectronics

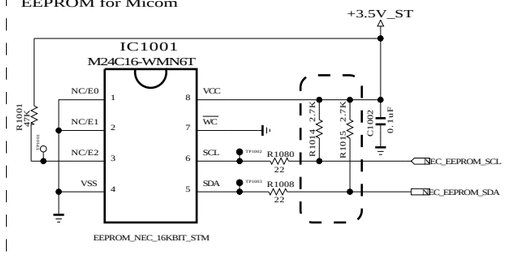
LG ELECTRONICS

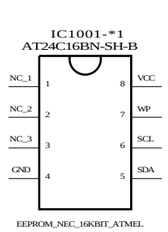
MODEL	GP2R	DATE	20101023
BLOCK	POWER_LARGE	SHEET	4

for Debugger

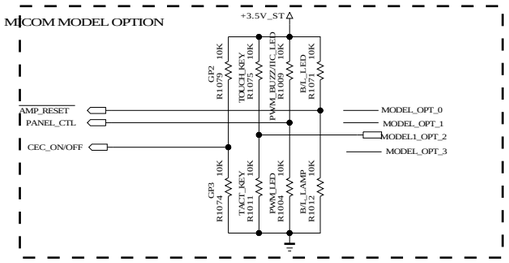


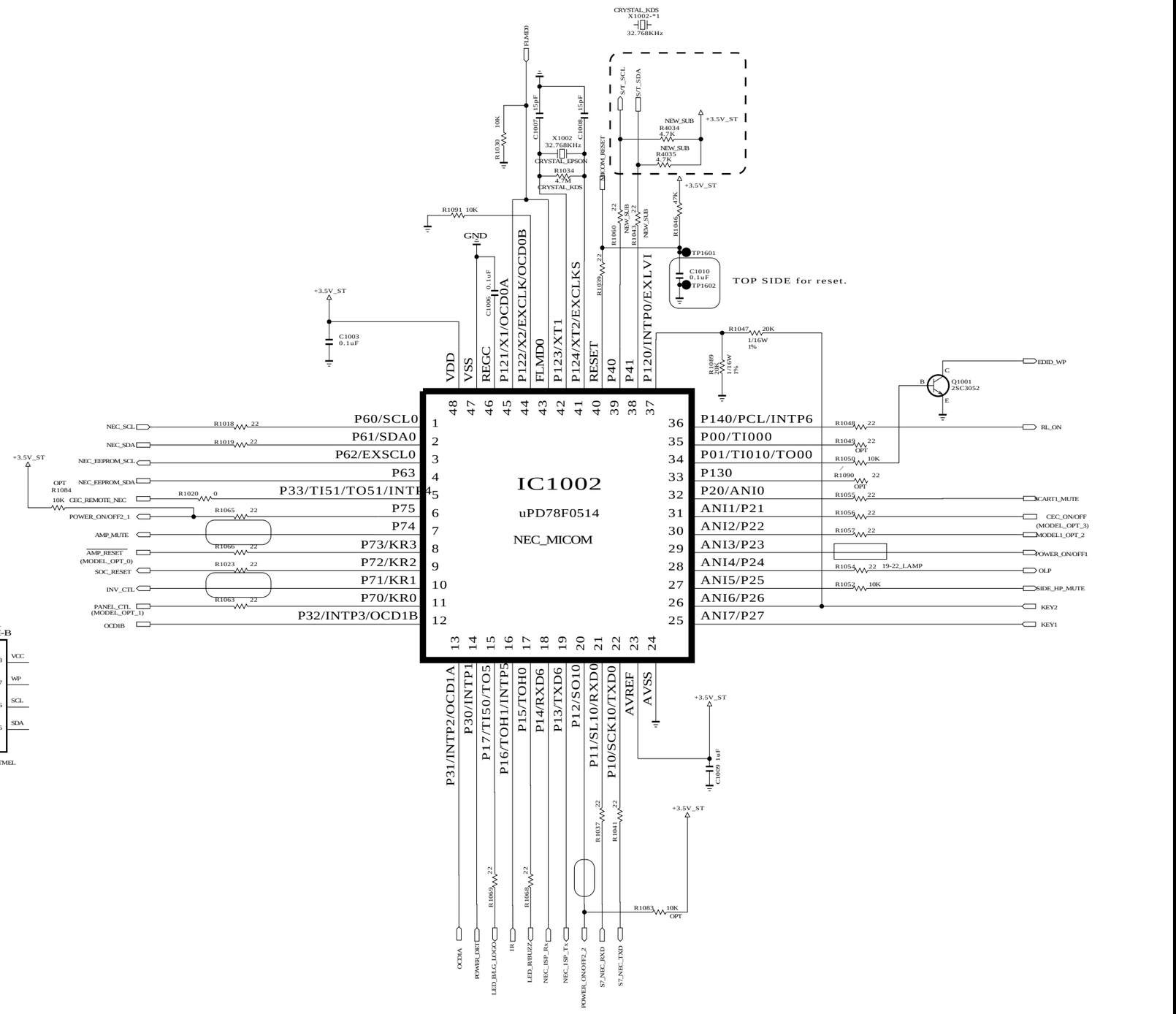
EEPROM for Micom





MICOM MODEL OPTION





2011Y,GP2R, 101125 Update

MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	B/L_LED	B/L_LAMP
MODEL_OPT_1	11	PWM_BUZZ/IIC_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	GP2	GP3

PWM_BUZZ/IIC_LED :Using IIC for LED Breathing & PWM Buzz
PWM_LED : Using PWM Signal for LED Lighting

MODEL_OPT_0	MODEL_OPT_1	MODEL_OPT_2	MODEL_OPT_3	Description
LOW	LOW	LOW	LOW	LK330/LK430 (for KR/US 10Y EYE-Q Sensor KEY & PWM LED & No Buzz & No LED Blink
LOW	LOW	LOW	HIGH	LK330/LK430/LK530 KEY & PWM LED & No Buzz & No LED Blink
LOW : LED HIGH : LAMP	HIGH	HIGH	LOW	LV25/LV35/LV45/LW45/LV55/LK45/LK55 S/T & HC LED & NO BUZZ & LED Blink
	HIGH	LOW	LOW	TBD IIC LED(09Y IIC Protocol) & No BUZZ
	Low	HIGH	LOW	TBD S/T & IIC LED & No Buzz & LED Blink

2010Y,GP2

MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	B/L_LED	B/L_LAMP
MODEL_OPT_1	11	PWM_BUZZ/IIC_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	GPIO_LED	NON_GPIO_LED

PWM_BUZZ/IIC_LED : For model that use LED Lighting used IIC
PWM_LED : For model that use LED Lighting used PWM Signal

MODEL_OPT_0	MODEL_OPT_1	MODEL_OPT_2	MODEL_OPT_3	
LOW	LOW	LOW	LOW	LD350/450/550 PWM LED & No Buzz & No LED Blink
HIGH	LOW	HIGH	LOW	19/22/26LE5300/5300 IIC LED & PWM IIC BUZZ
HIGH	HIGH	HIGH	LOW	32/37/42/47/55LE5300 IIC LED & PWM BUZZ
LOW	HIGH	LOW	LOW	LD420 IIC LED(09Y IIC Protocol) & No BUZZ
HIGH	LOW	LOW	HIGH	LE7300 GPIO LED & NO BUZZ

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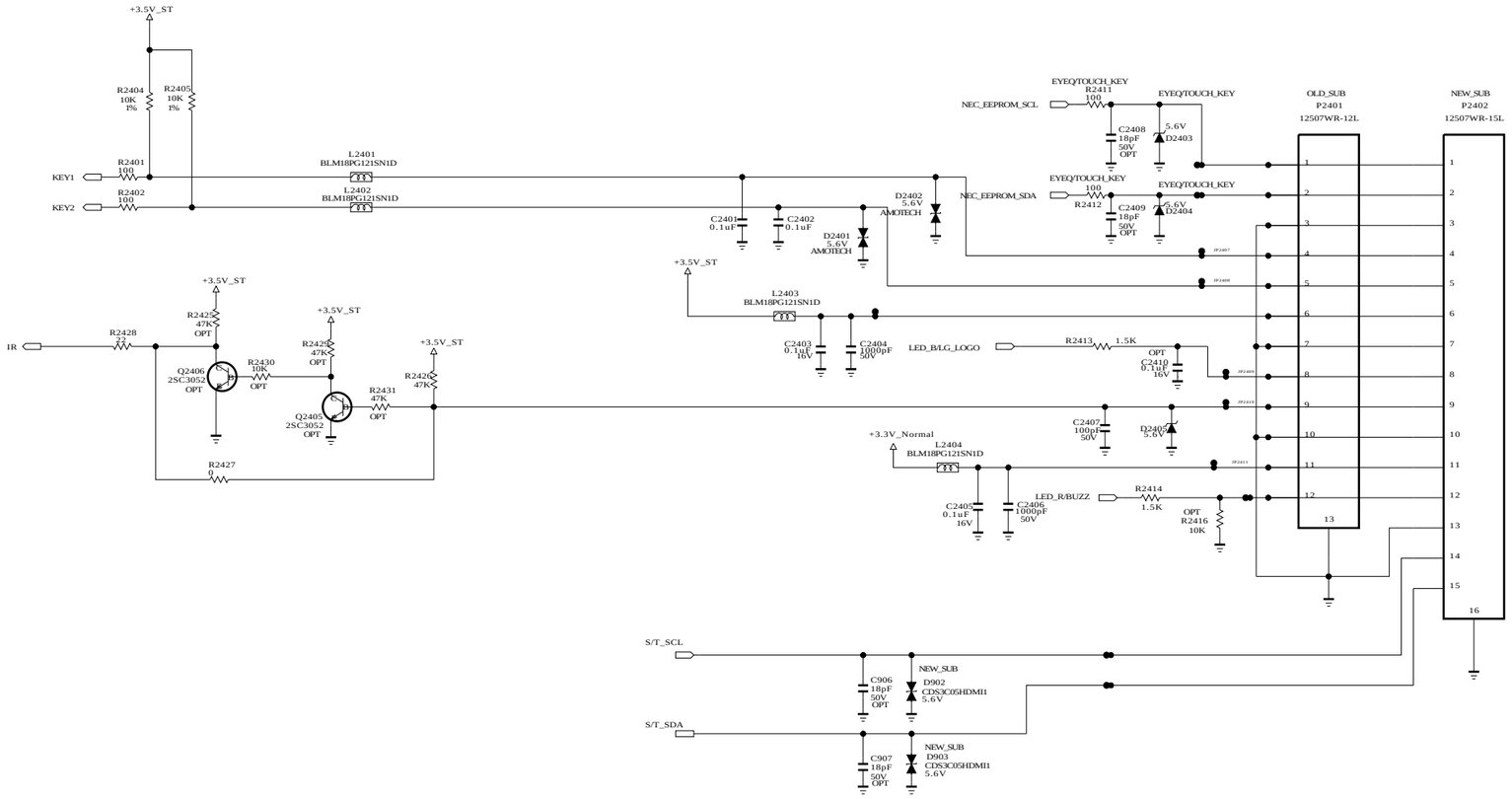
SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101125
BLOCK	MICOM Rev.4	SHEET	5

CONTROL

IR & LED



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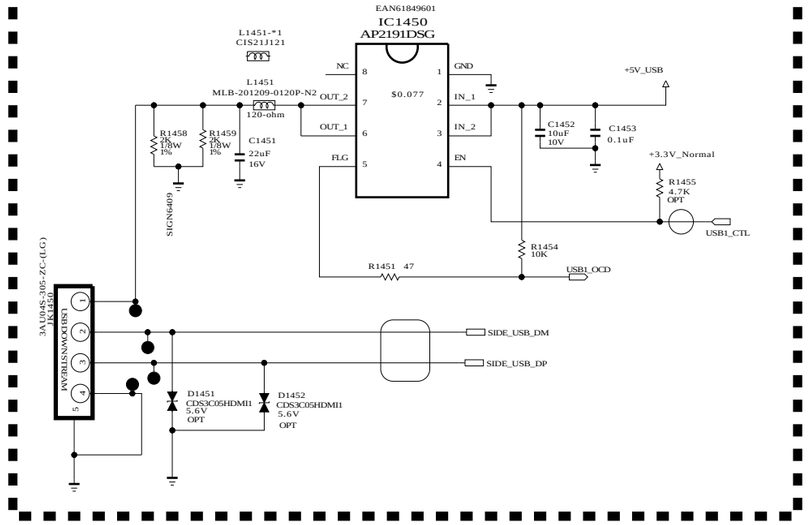
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	IR/CONTROL-L	SHEET	6

USB_DIODES



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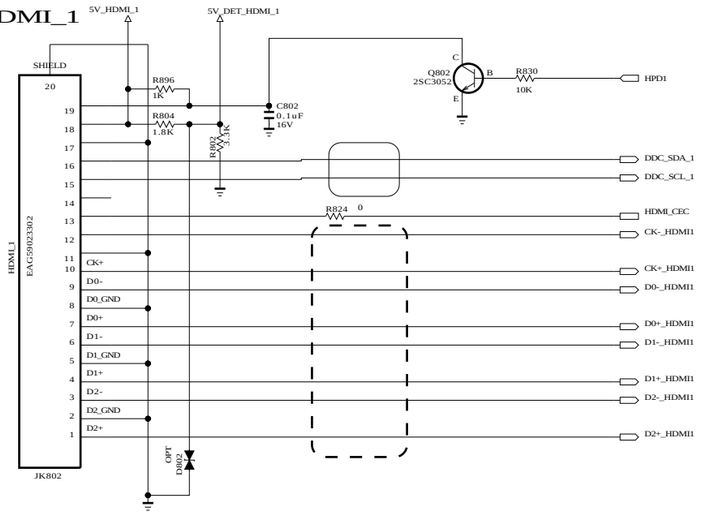
SECRET

LGElectronics

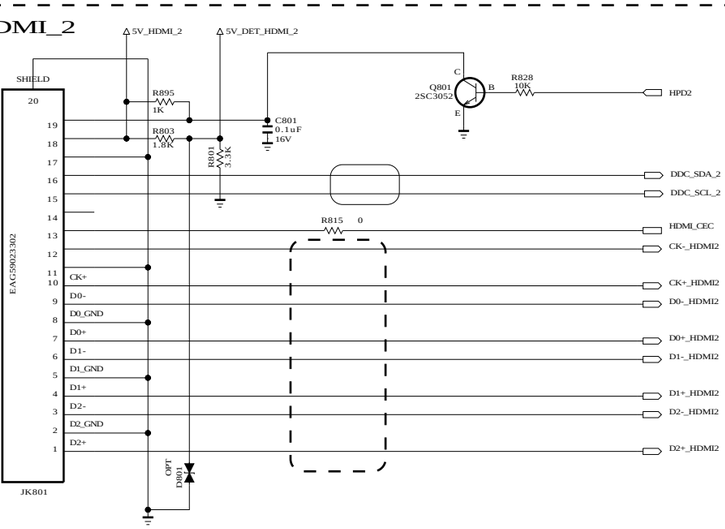
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	USB_OCP_DIODE	SHEET	7 /

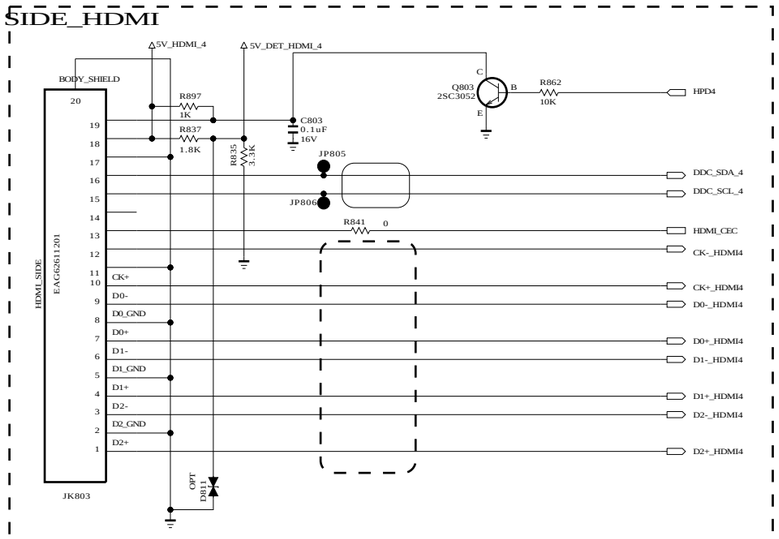
HDMI_1



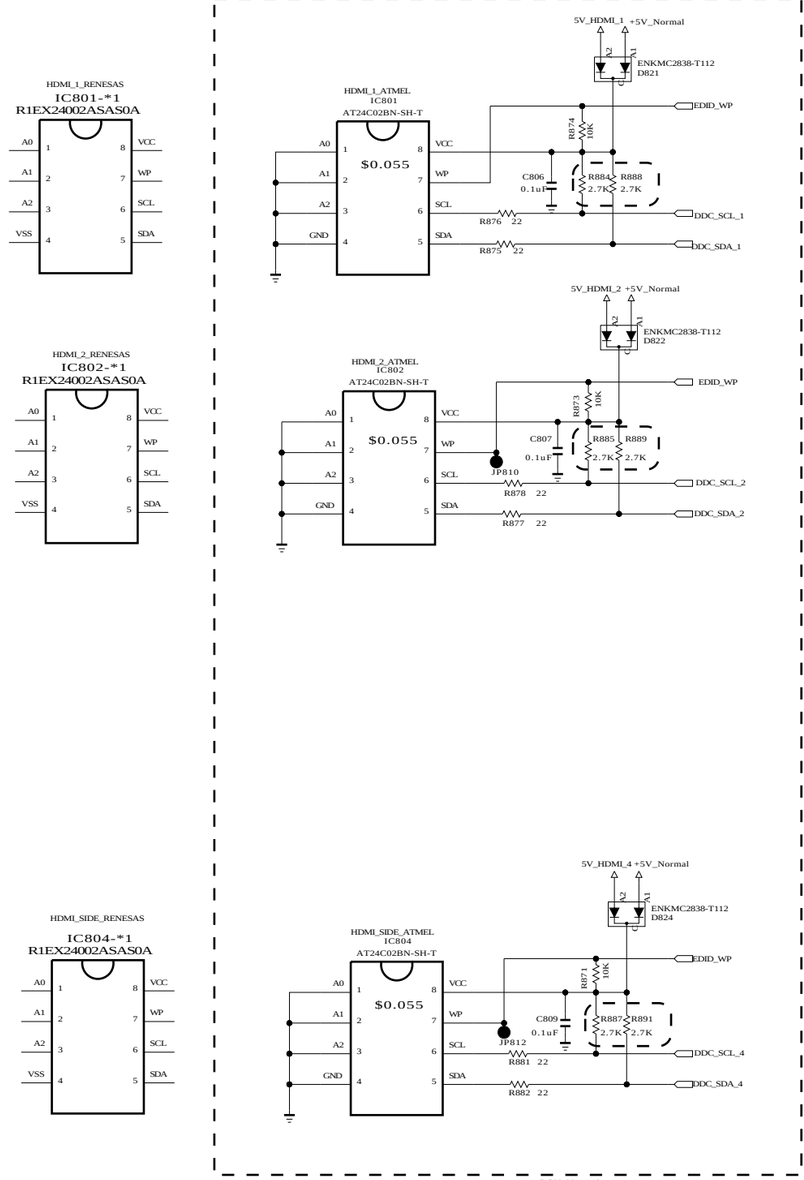
HDMI_2



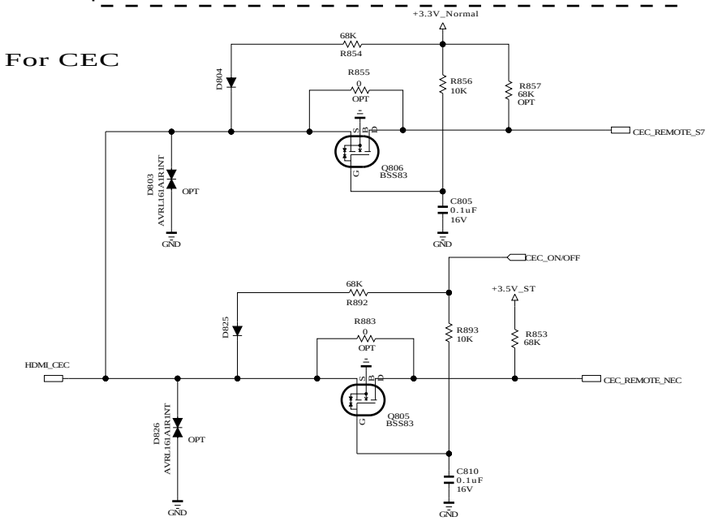
SIDE_HDMI



HDMI EEPROM



For CEC



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SECRET

LGElectronics

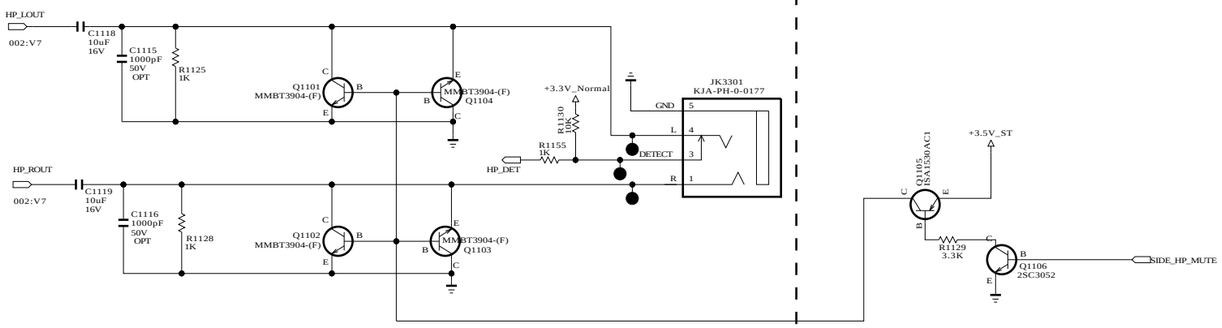
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	HDMI	SHEET	8

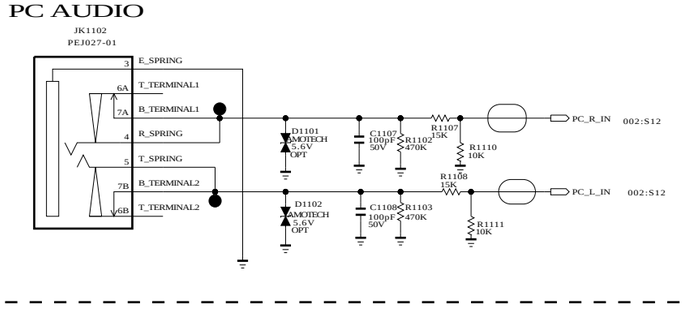
RGB/SPDIF/PC/HP

New Item Development

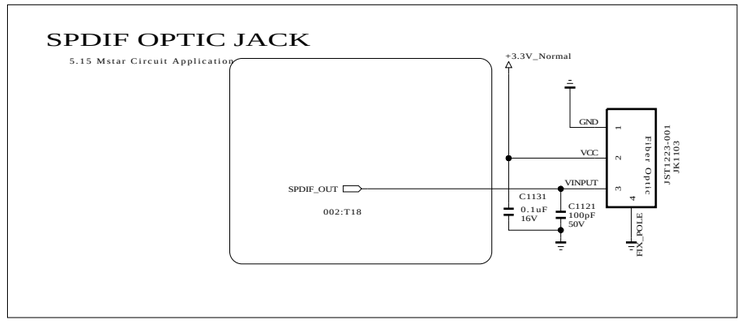
EARPHONE BLOCK



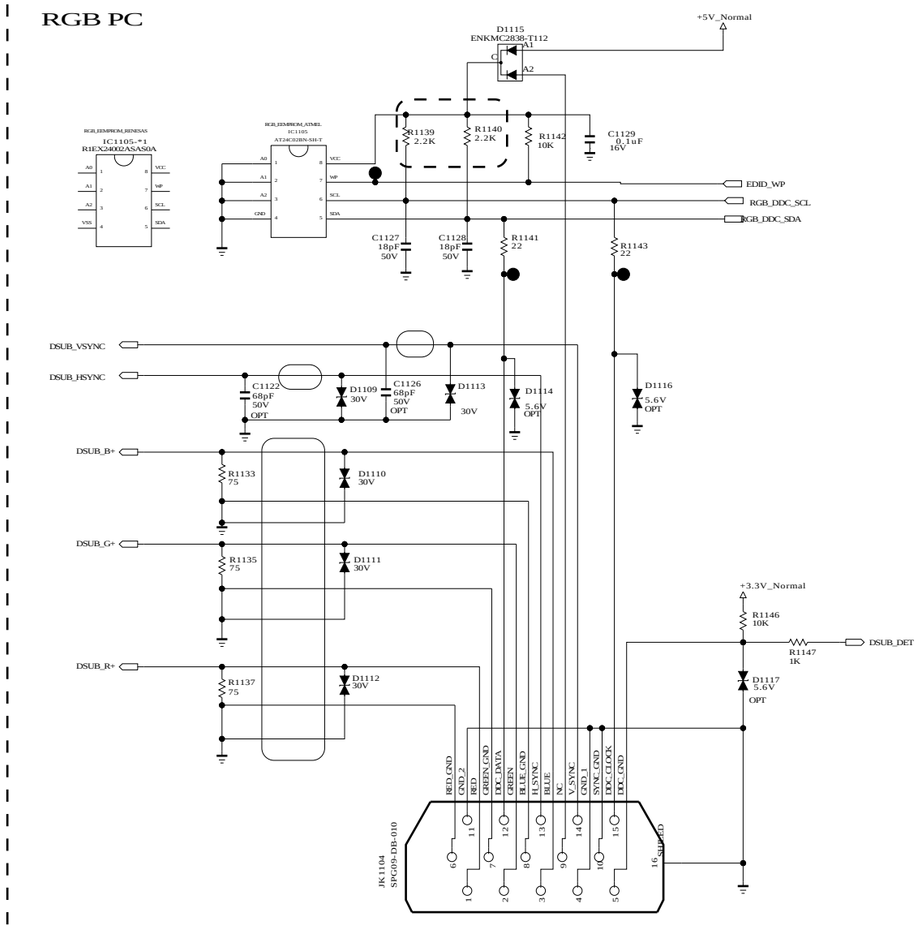
PC AUDIO



SPDIF OPTIC JACK



RGB PC



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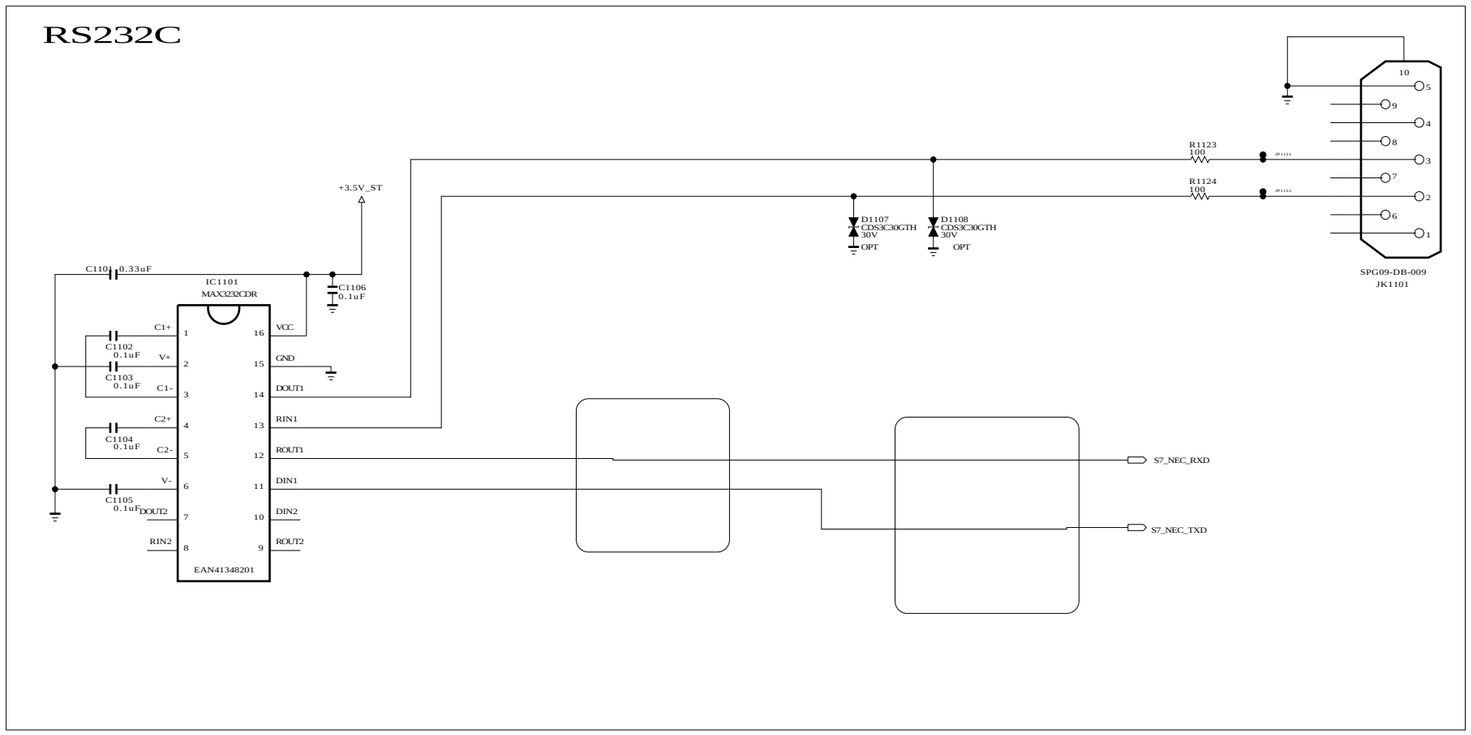
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	RGB/SPDIF/HP	SHEET	9

RS232C



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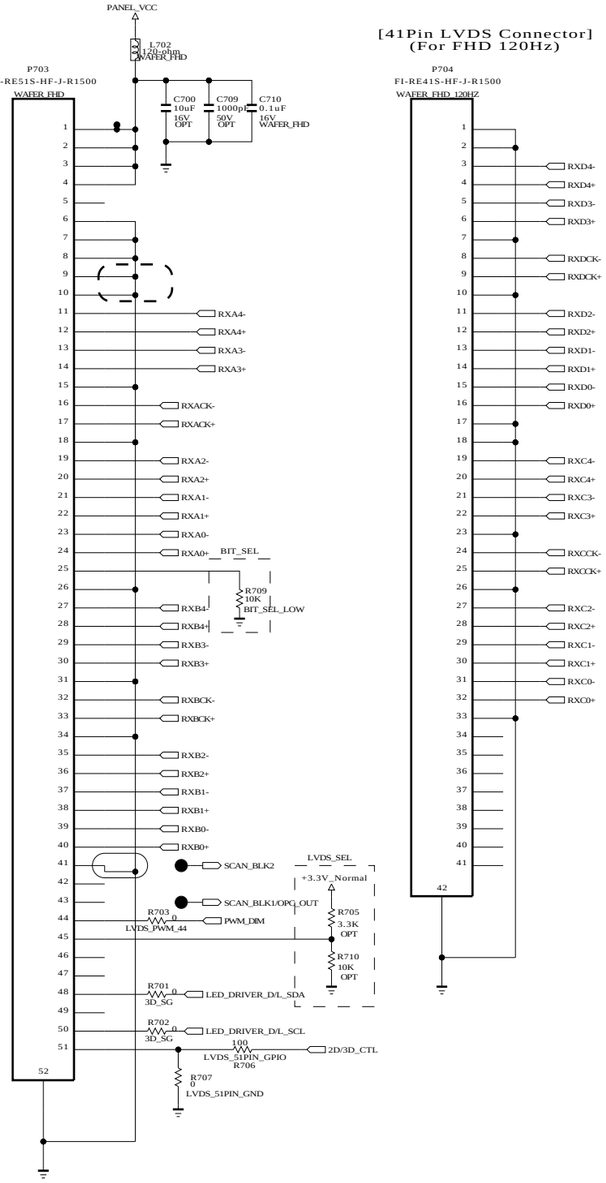
SECRET

LGElectronics

LG ELECTRONICS

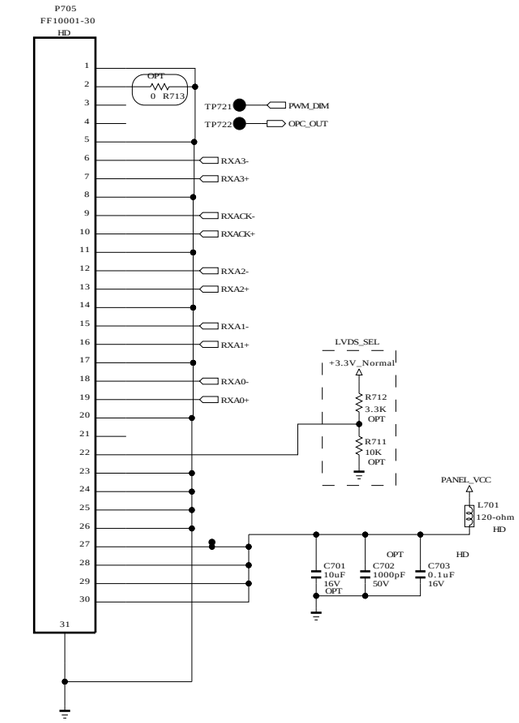
MODEL	GP2R	DATE	20101023
BLOCK	RS232C_9PIN	SHEET	10

[51Pin LVDS Connector] (For FHD 60/120Hz)



[41Pin LVDS Connector] (For FHD 120Hz)

[30Pin LVDS Connector] (For HD 60Hz_Normal)



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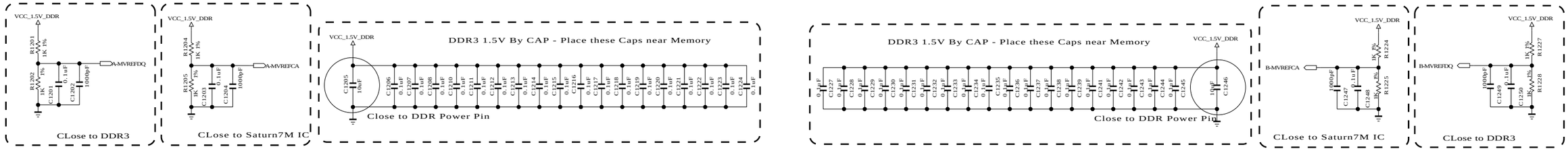
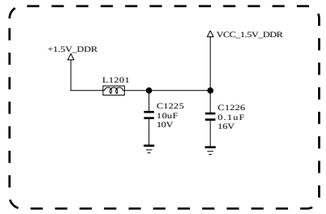
SECRET

LGElectronics

LG ELECTRONICS

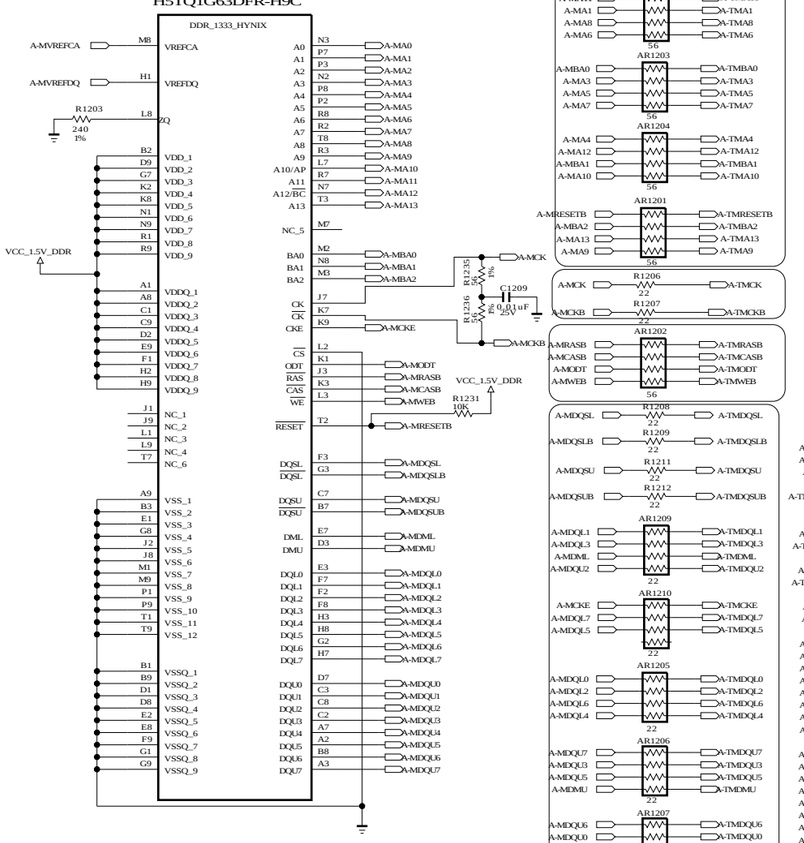
MODEL	GP2R	DATE	20101023
BLOCK	LVDS_LARGE	SHEET	11





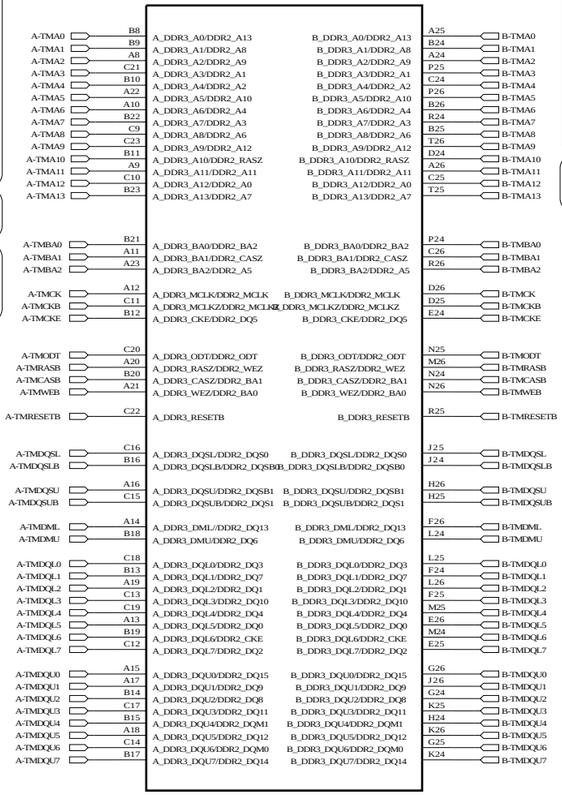
EAN61828901

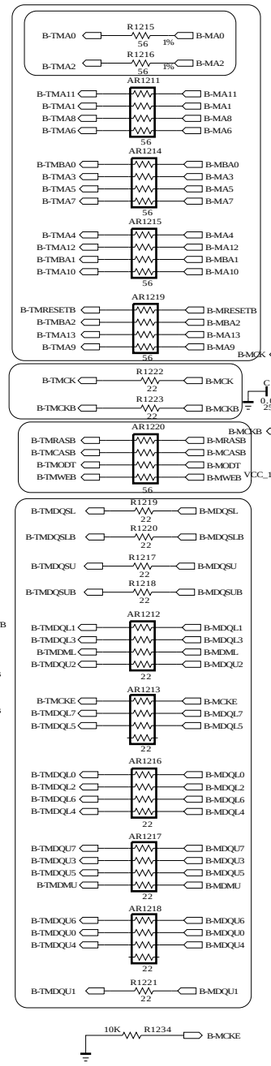
IC1201
H5TQ1G63DFR-H9C



S7M-PLUS_DivX_MS10

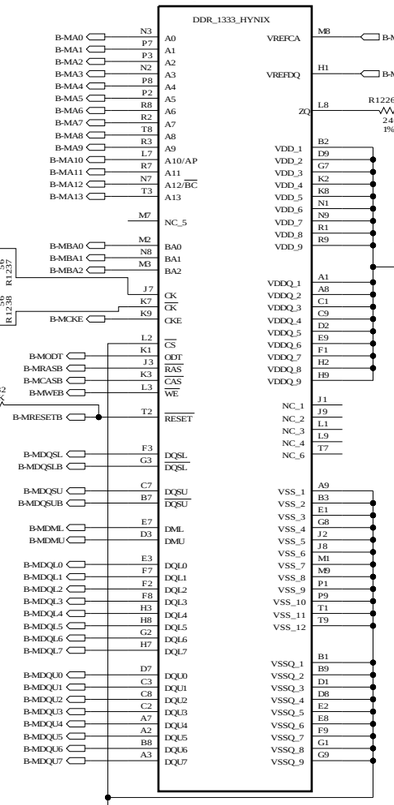
IC101
LGE107DC-RP [S7M+ DIVX/MS10]



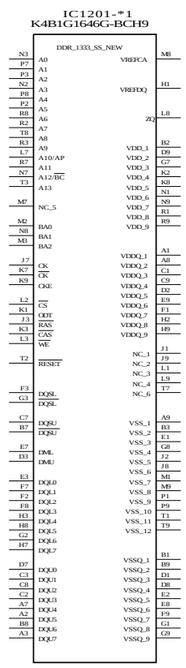


EAN61828901

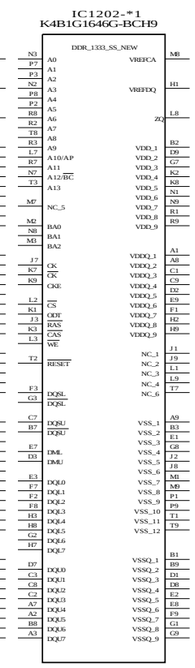
IC1202
H5TQ1G63DFR-H9C



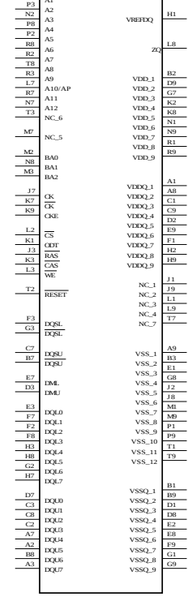
IC1201-*1
K4B1G1646G-BCH9



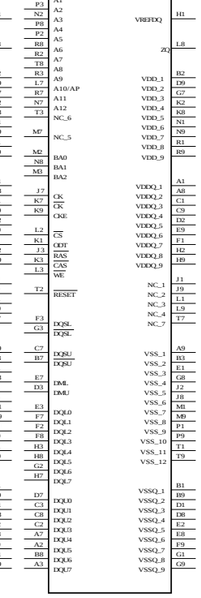
IC1202-*1
K4B1G1646G-BCH9



IC1201-*2
NT5CB64M16DP-CF



IC1202-*2
NT5CB64M16DP-CF



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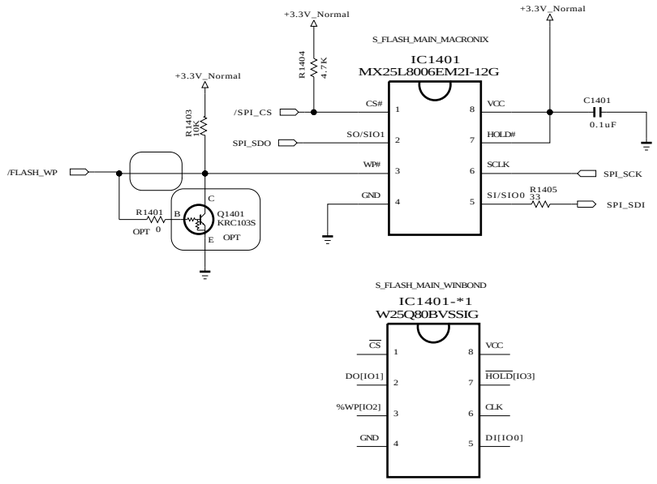
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	DDR_256	SHEET	12 /



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SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	FLASH 1MB	SHEET	13 /

GP2R_LARGE_TUNER

TU3702
TDTJ-S001D

DVB_1INPUT_H_LGIT

1	ANT_PWR[OPT]
2	BST_CNTL
3	+B
4	NC[RF_AGC]
5	AS
6	SCL
7	SDA
8	NC[IF_TP]
9	S1F
10	NC
11	VIDEO
12	GND
13	1.2V
14	3.3V
15	RESET
16	IF_AGC_CNTL
17	DIF_1
18	DIF_2
19	SHIELD

CN_2INPUT_H_LG3911

TU3701
TDFR-C036D

1	RF_S/W_CNTL
2	BST_CNTL
3	+B1[+5V]
4	NC[RF_AGC]
5	NC_1
6	SCLT
7	SDAT
8	NC_2
9	S1F
10	NC_3
11	VIDEO
12	GND
13	+B2[1.2V]
14	+B3[3.3V]
15	RESET
16	NC_4
17	SCL
18	SDA
19	ERR
20	SYNC
21	VALID
22	MCL
23	D0
24	D1
25	D2
26	D3
27	D4
28	D5
29	D6
30	D7
31	SHIELD

close to TUNER

R3702 0 RF_SW_OPT

C3701 0.1uF 16V

RF_SWITCH_CTL

Pull-up can't be applied because of MODEL_OPT_2

close to TUNER

OPT R3762 0 CONTROL_ATTEN

+5V_TU

C3703 100pF 50V

C3704 0.1uF 16V

OPTION : RF AGC

C3728 0.1uF 16V OPT

C3731 10uF 10V OPT

Q3704 2SC3052 OPT

R3754 10K OPT

FE_AGC_SPEED_CTL
IF_AGC_SEL

R3707 0 OPT

C3706 0.1uF 16V

C3702 0.1uF 16V close to TUNER

+1.2V/+1.8V_TU

+3.3V_TU

CN C3739 10uF 6.3V

C3707 100pF 50V

C3708 0.1uF 16V

close to the tuner pin, add,09029

C3737 100pF 50V

C3738 0.1uF 16V

FULL_NIM C3705 100uF 16V

R3732 100

R3733 100K

TUNER_RESET

C3710 0.1uF 16V

C3711-*1 20pF 50V TU_I2C_FILTER

C3713-*1 20pF 50V TU_I2C_FILTER

TU_I2C_FILTER R3735-*1 0 COIL

TU_I2C_FILTER R3736-*1 0 COIL

GPIO must be added.

TU_IIC_NON_ATSC_SANYO

R3740-*1 1K

R3741-*1 1K

TU_IIC_ATSC_SANYO

R3740 1.2K

R3741 1.2K

TU_I2C_NON_FILTER

R3735 33

R3736 33

TU_SCL

TU_SDA

C3711 18pF 50V

C3713 18pF 50V

C3742 20pF 50V

C3743 20pF 50V TU_I2C_FILTER

TU_I2C_FILTER

BOOSTER : CHINA OPT

L3700 BOOSTER_OPT BLM18PG121SN1D

R3734 0 BOOSTER_OPT

R3743 10K BOOSTER_OPT

Q3701 ISA1530AC1 BOOSTER_OPT

R3737 2.2K

Q3702 2SC3052 BOOSTER_OPT

R3745 10K BOOSTER_OPT

FE_BOOSTER_CTL
LNA2_CTL

The pull-up/down of LNA2_CTL is depended on MODLE_OPT_1. GPIO must be added for FE_BOOSTER_CTL

C3709 0.01uF 25V BOOSTER_OPT

+5V_TU

R3755 470

R3758 82

TU_SIF

ISA1530AC1 Q3705

R3755 4.7K

+5V_TU

R3751 220

R3752 220

TU_CVBS

R3749 0

R3750 1K OPT

Q3703 ISA1530AC1

DEMOD_RESET

This was being applied to the only china demod, so this has to be deleted in both main and ISDB sh

+3.3V_TU

R3704 0 HALF_NIM

IF_AGC_MAIN

should be guarded by ground

R3742 4.7K FULL_NIM

R3744 4.7K FULL_NIM

DEMOD_SCL

DEMOD_SDA

C3712 22pF 50V FULL_NIM

C3714 22pF 50V FULL_NIM

FULL_NIM R3702 100

FULL_NIM R3701 100

close to IF line

HALF_NIM R3760 0

R3761 0 HALF_NIM

IF_N_MSTAR

IF_P_MSTAR

1. should be guarded by ground
2. No via on both of them
3. Signal Width >= 12mils
Signal to Signal Width = 12mils
Ground Width >= 24mils

Close to the tuner

FULL_NIM R3724 0 FE_TS_SYNC

FULL_NIM R3730 0 FE_TS_VAL_ERR

FULL_NIM R3731 0 FE_TS_CLK

FULL_NIM_CHINA R3725 0 FE_TS_DATA[0]

FULL_NIM R3727 0 FE_TS_DATA[1]

FULL_NIM R3728 0 FE_TS_DATA[2]

FULL_NIM R3729 0 FE_TS_DATA[3]

FULL_NIM R3726 0 FE_TS_DATA[4]

FULL_NIM R3721 0 FE_TS_DATA[5]

FULL_NIM R3722 0 FE_TS_DATA[6]

FULL_NIM_CHINA R3723 0 FE_TS_DATA[7]

Close to the CI Slot

R3706 0 FULL_NIM_BR

FE_TS_DATA[0-7]

TUNER MULTI-OPTION

GP1_ATSC_1INPUT_H_SANYO

TU3702-*1 TDVJ-H101F

TU3702-*3 UDATSAL

GP1_ATSC_1INPUT_H_LGIT

GP2R_AU_1INPUT_H_LGIT

TU3702-*4 TDTJ-S101D

NTSC_2INPUT_H_LGIT

TU3702-*2
TDTR-T036F

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HALF_NIM_1.2V_BCD
IC3703
AZ1117BH-ADJTRE1

+3.3V_TU

INPUT 3 1 ADJ/GND

OUTPUT 2

R2 HALF_NIM R3767 10

+1.2V/+1.8V_TU

HALF_NIM R3768 1.2K R1

IC3703-*1
AP1117EG-13

IN OUT

ADJ/GND

HALF_NIM_1.2V_DIODES

R3703 150 OPT

HALF_NIM

R3766 1 1/10W

C3740 0.1uF 16V HALF_NIM

C3741 10uF 10V HALF_NIM

Please, check multi Item! 10/12

IC3701
AP2132MP-2.5TRG1

FULL_NIM_BCD

R3748-*1 10K

+1.2V/+1.8V_TU 380mA

C3717 0.1uF 16V

R3771 10K FULL_NIM_BCD

R3770 10K FULL_NIM_SEMTEK

R3769 10K FULL_NIM_BCD

PG GND EN ADJ VIN VOUT VCTRL NC

THERMAL 9

FULL_NIM_SEMTEK

R3748 5.1K R1

R3747 9.1K 1005 R2

Vo=0.8*(1+R1/R2)

R3764 0 1/10W FULL_NIM

FULL_NIM C3729 0.1uF 16V

FULL_NIM C3730 10uF 10V

+5V_Normal

FULL_NIM_BCD L3704

IC3701-*1
SC4215ISTRT

NC_1 FULL_NIM_SEMTEK GND EN ADJ VIN VO NC_2 NC_3

+5V_TU

200mA

Size change L3702

MLB-201209-0120P-N2

C3719 22uF 10V

C3724 0.1uF 16V

C3722 22uF 16V

C3726 0.1uF 16V

location movement,0929

+5V_Normal

60mA

+3.3V_TU

Size change L3703

MLB-201209-0120P-N2

C3723 22uF 10V

C3725 0.1uF 16V

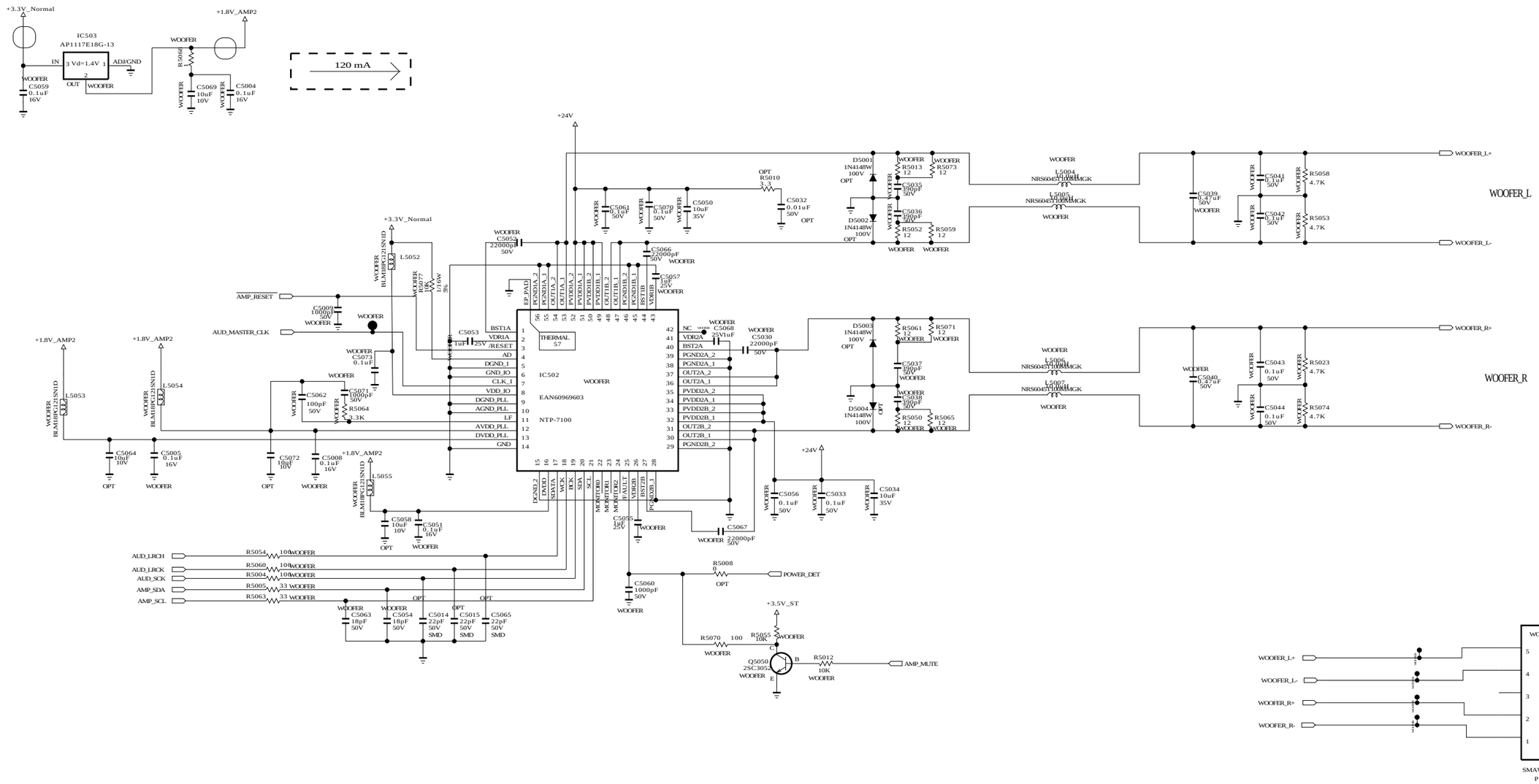
C3715 22uF 10V

C3727 0.1uF 16V

Add,0929

MODEL	GP2R	DATE	20101023
BLOCK	TUNER_L	SHEET	14

WOOFER AMP



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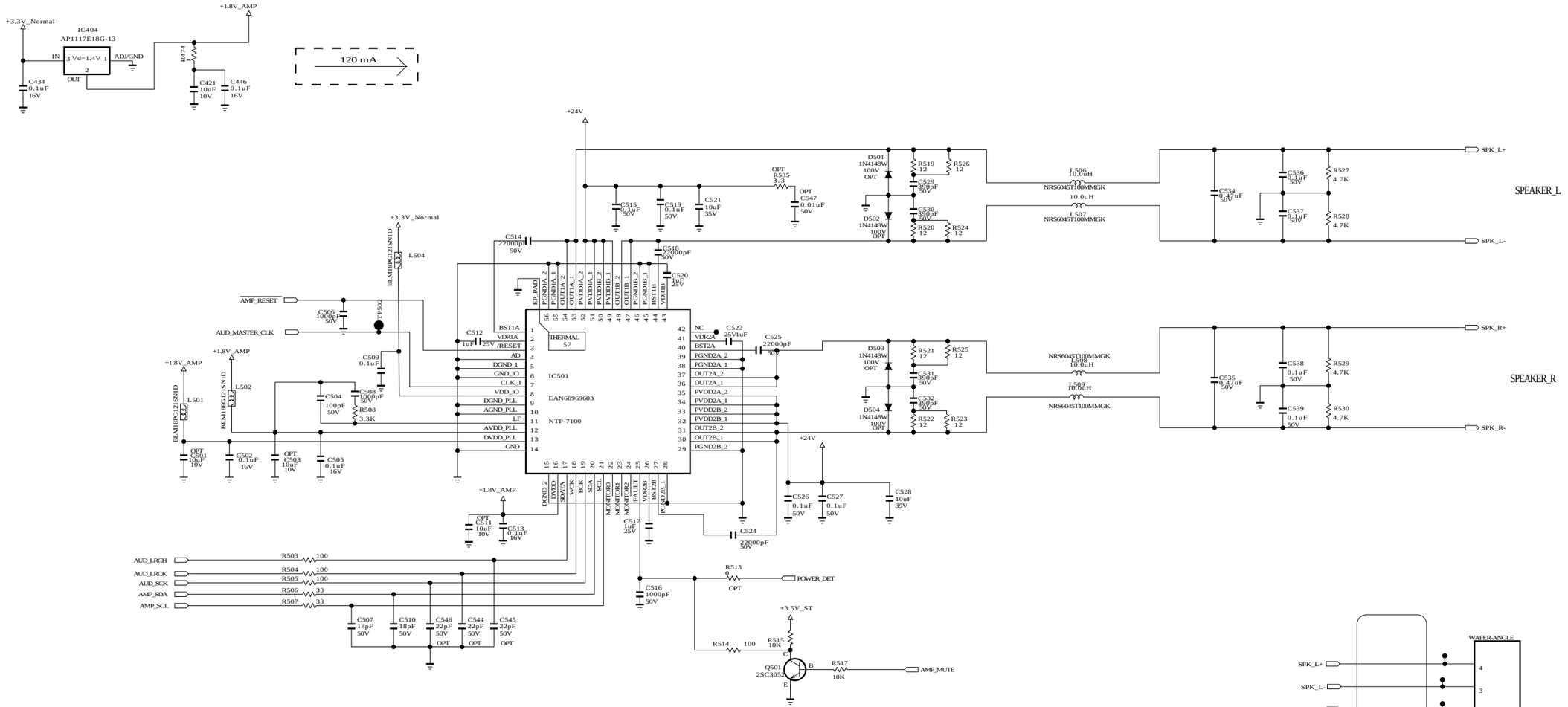
MODEL	GP2R	DATE	20101023
BLOCK	WOOFER NTP	SHEET	15 /



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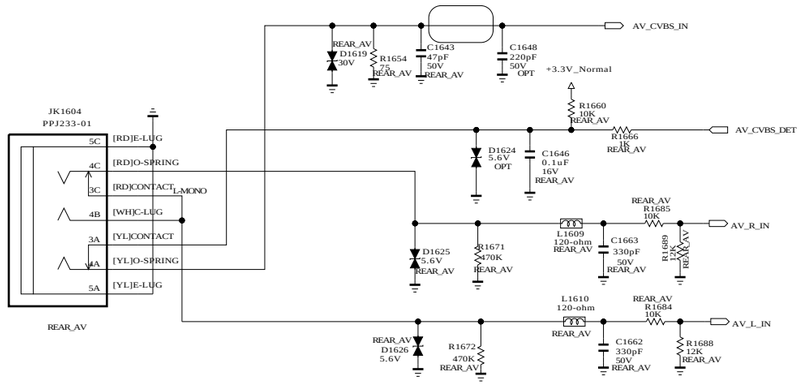
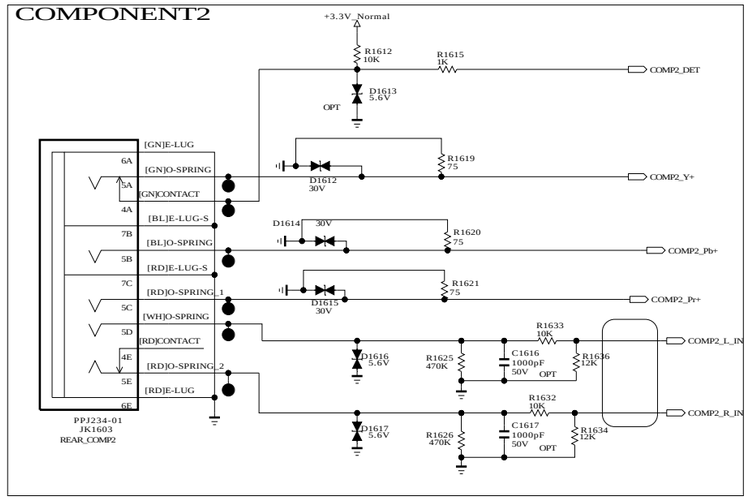
MODEL	GP2R	DATE	20101023
BLOCK	AMP NTP	SHEET	16

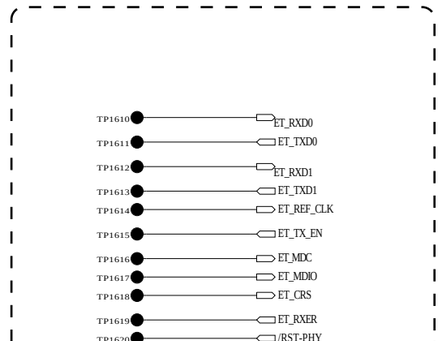
Rear AV

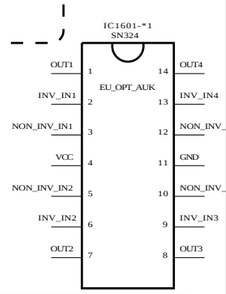


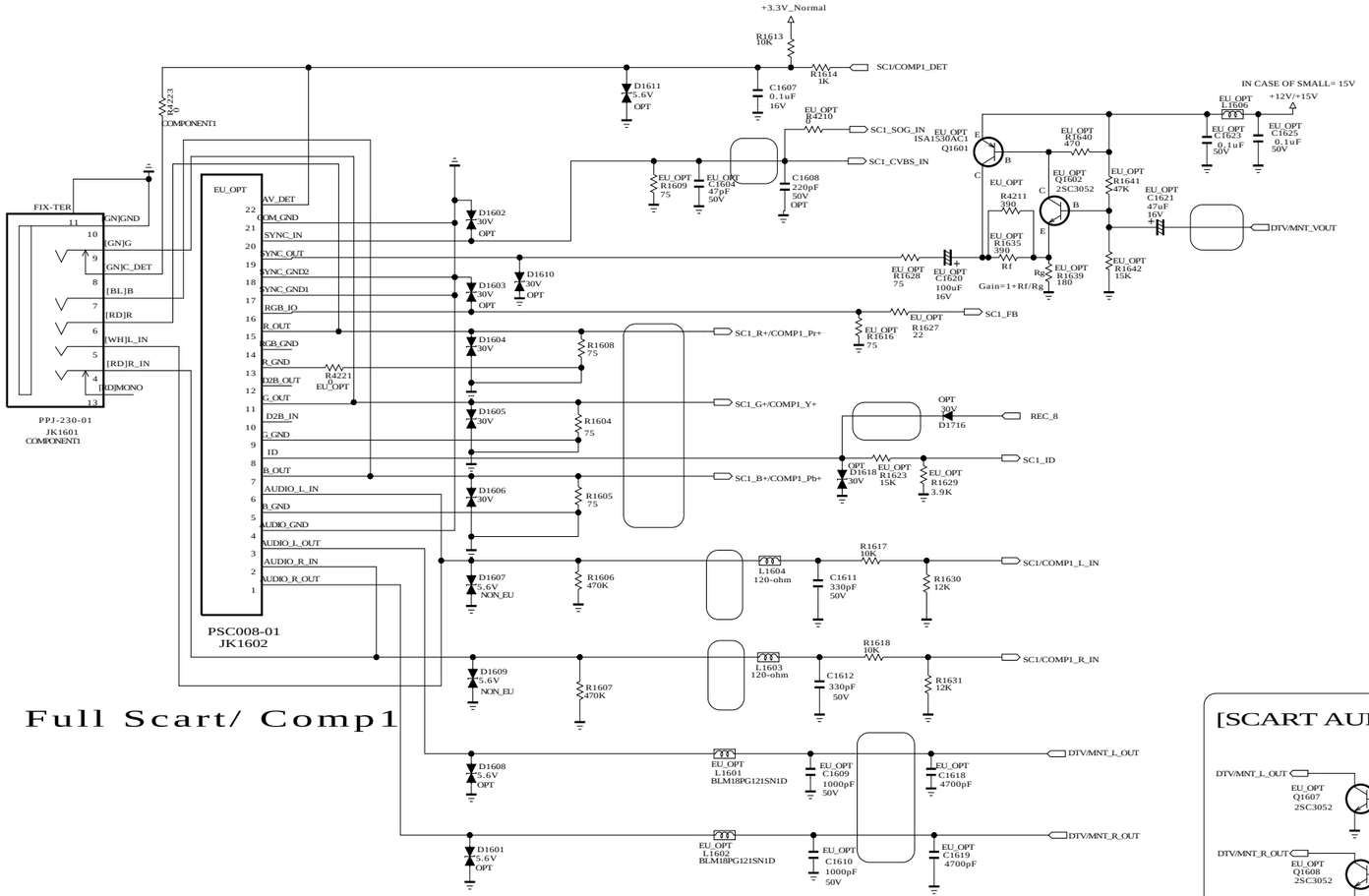
COMPONENT2



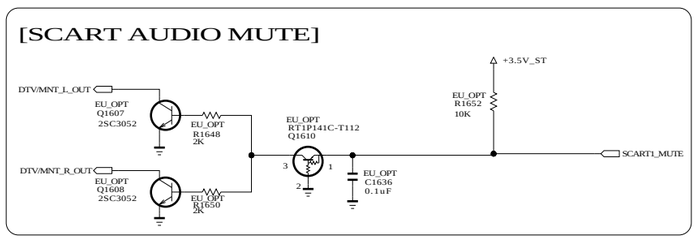
ETHERNET FOR DVB_T2

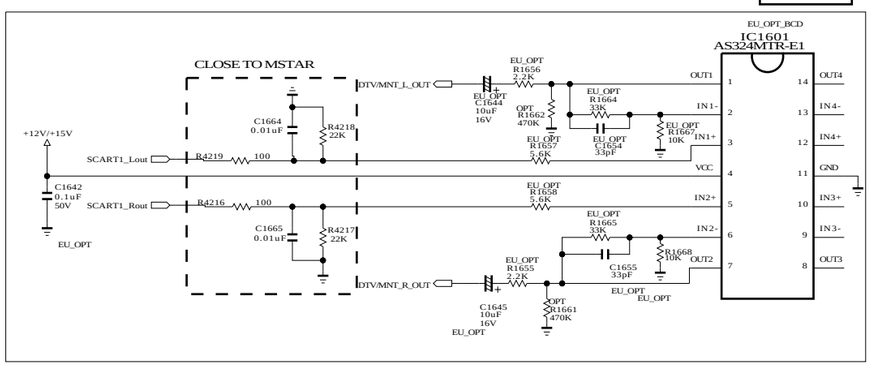


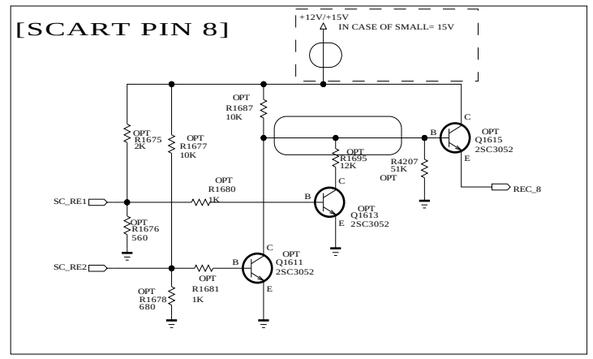




Full Scart/ Comp1







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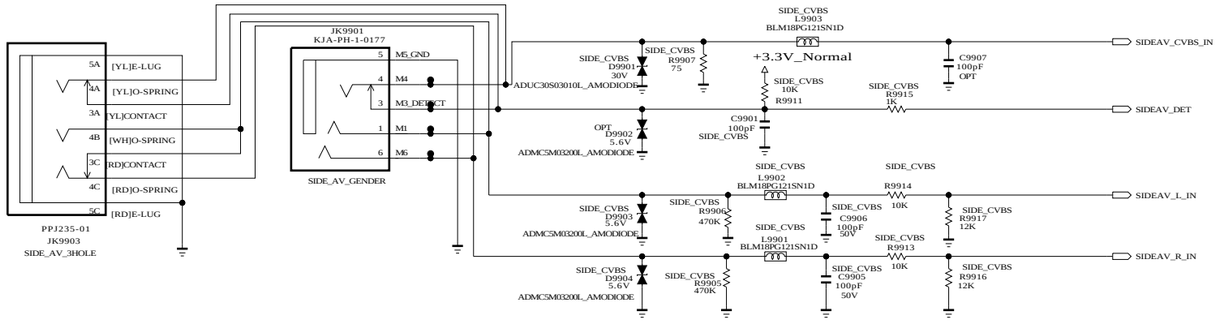
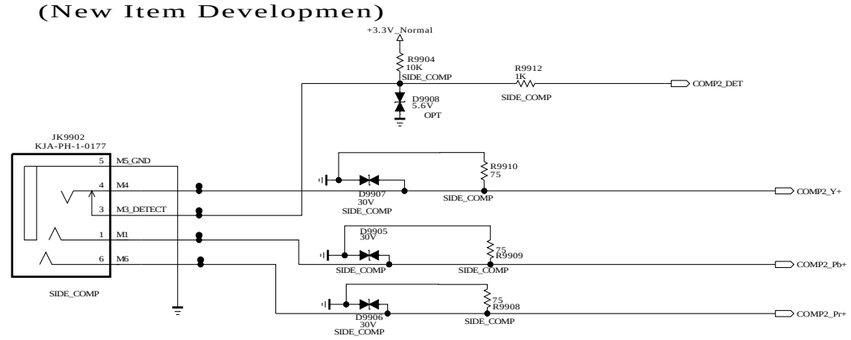
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	REAR JACK	SHEET	17 /

SIDE CVBS PHONE JACK
(New Item Development)



SIDE COMPONENT PHONE JACK
(New Item Developmen)



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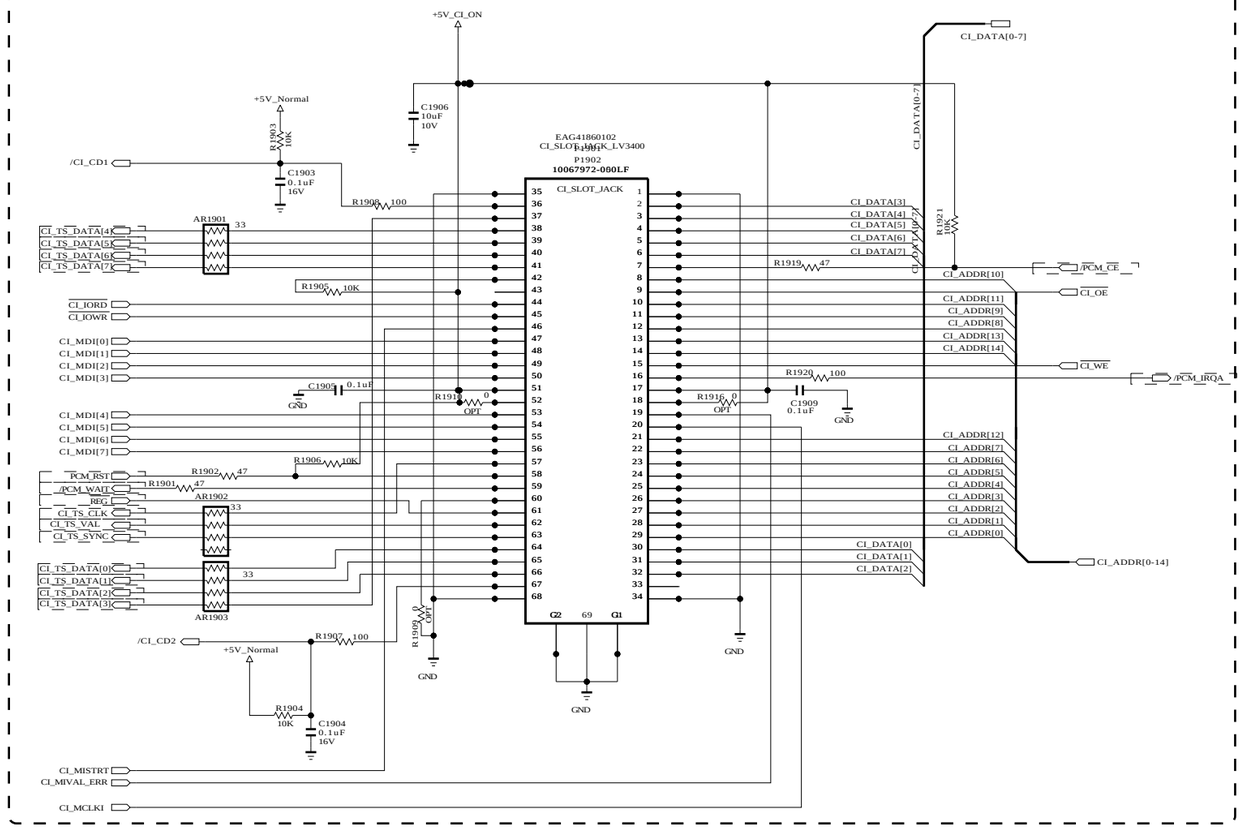
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	SIDE_JACK	SHEET	18 /

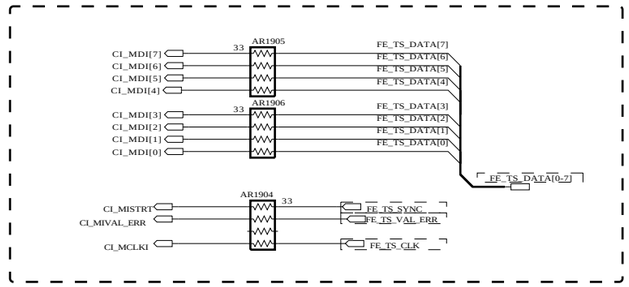
CI Region

* Option name of this page : CI_SLOT (because of Hong Kong)

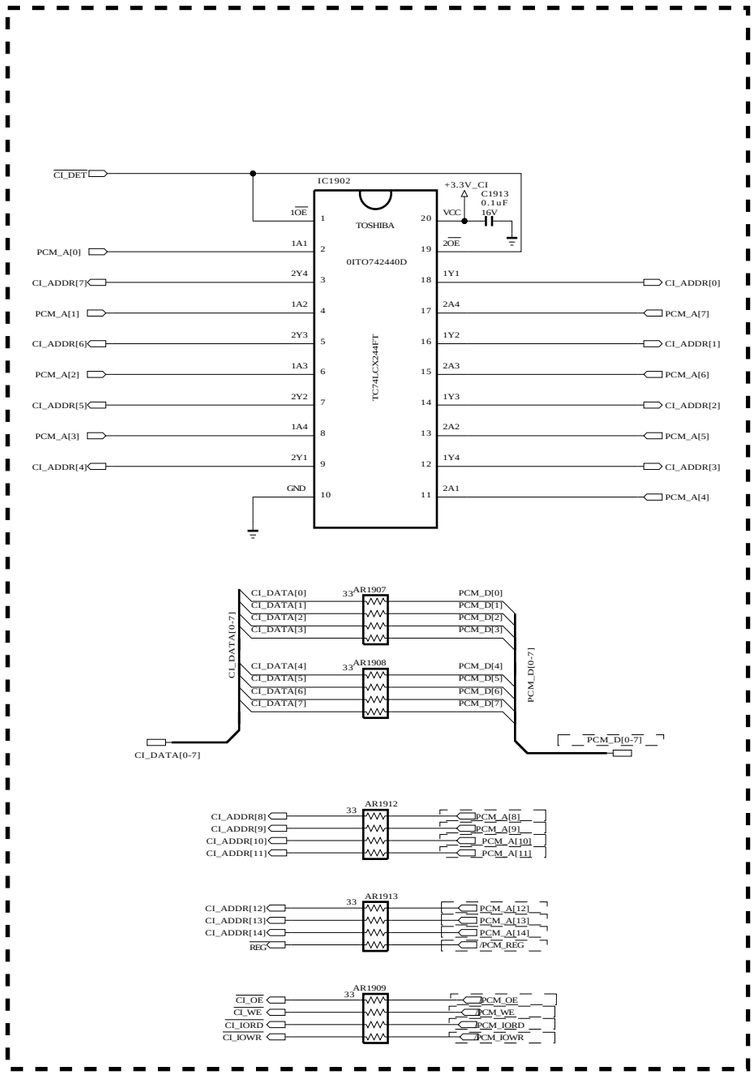
CI SLOT

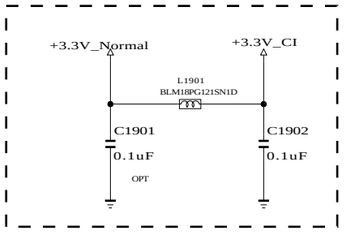


CI TS INPUT

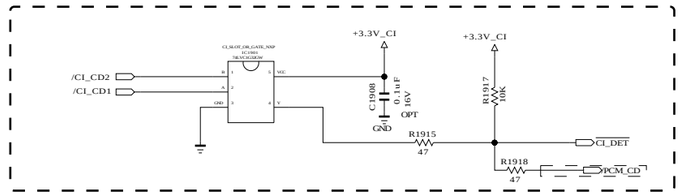


CI HOST I/F

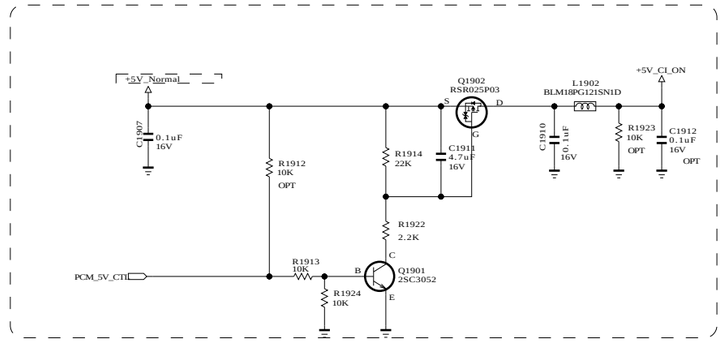




CI DETECT



CI POWER ENABLE CONTROL



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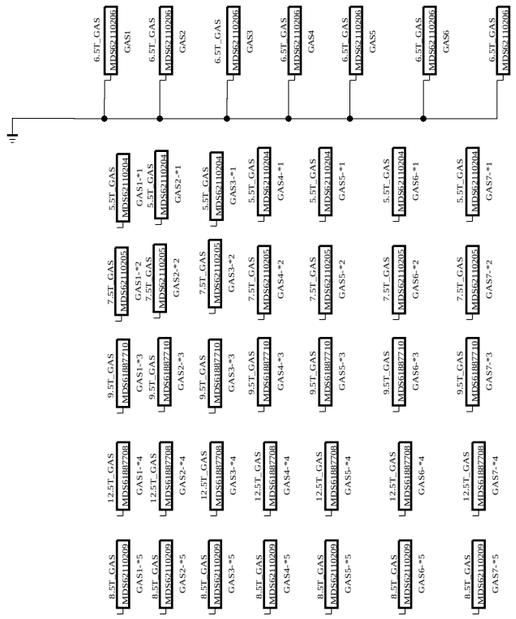
MODEL	GP2R	DATE	20101023
BLOCK	PCMCI	SHEET	20 /

SMD GASKET



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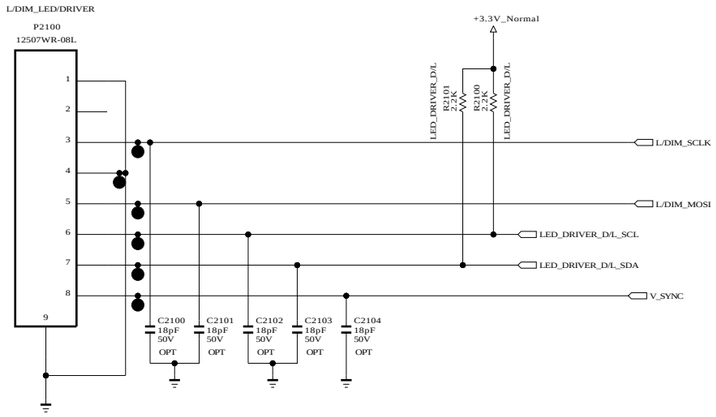
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	SMD_GAS	SHEET	20 /



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SECRET

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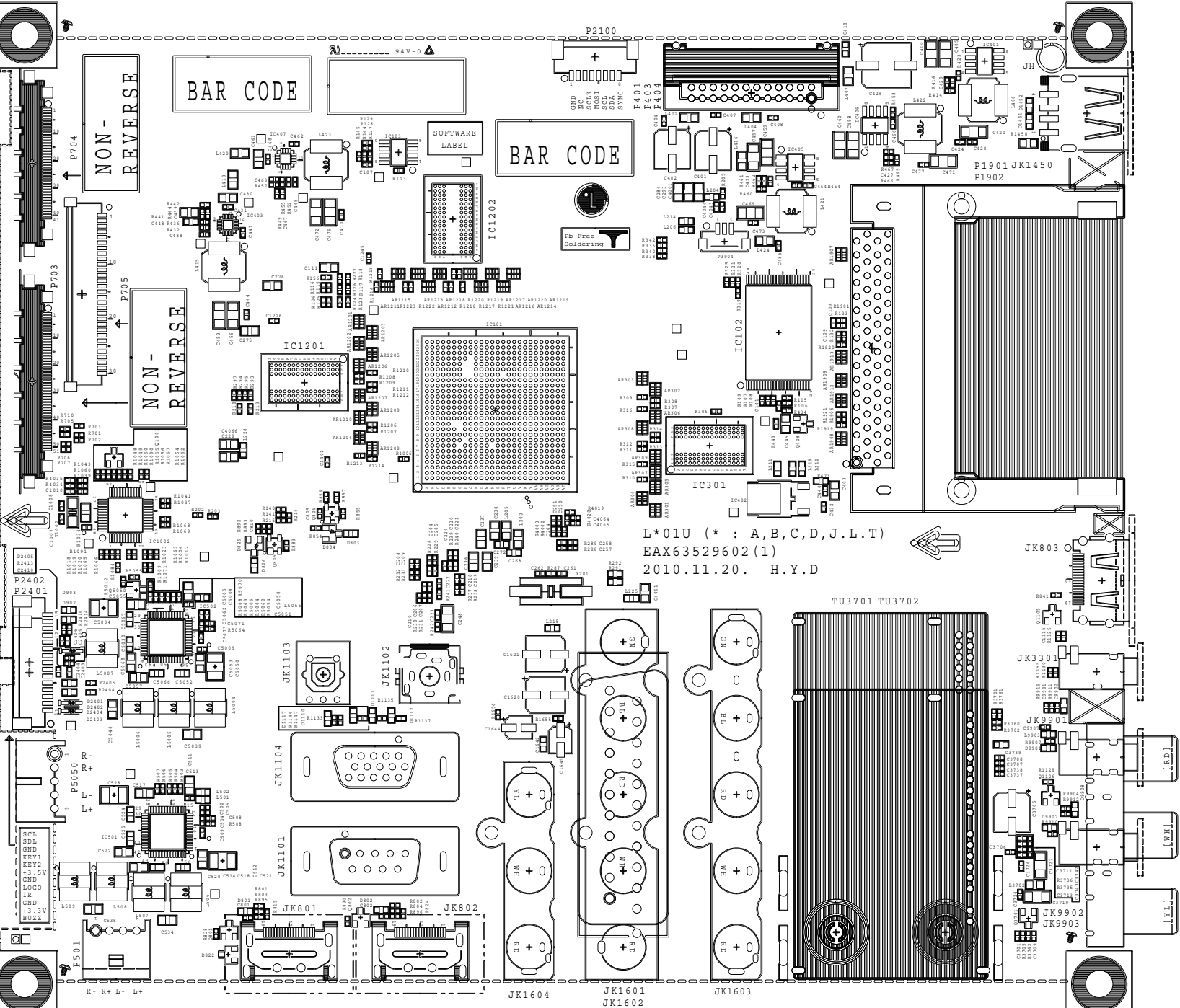
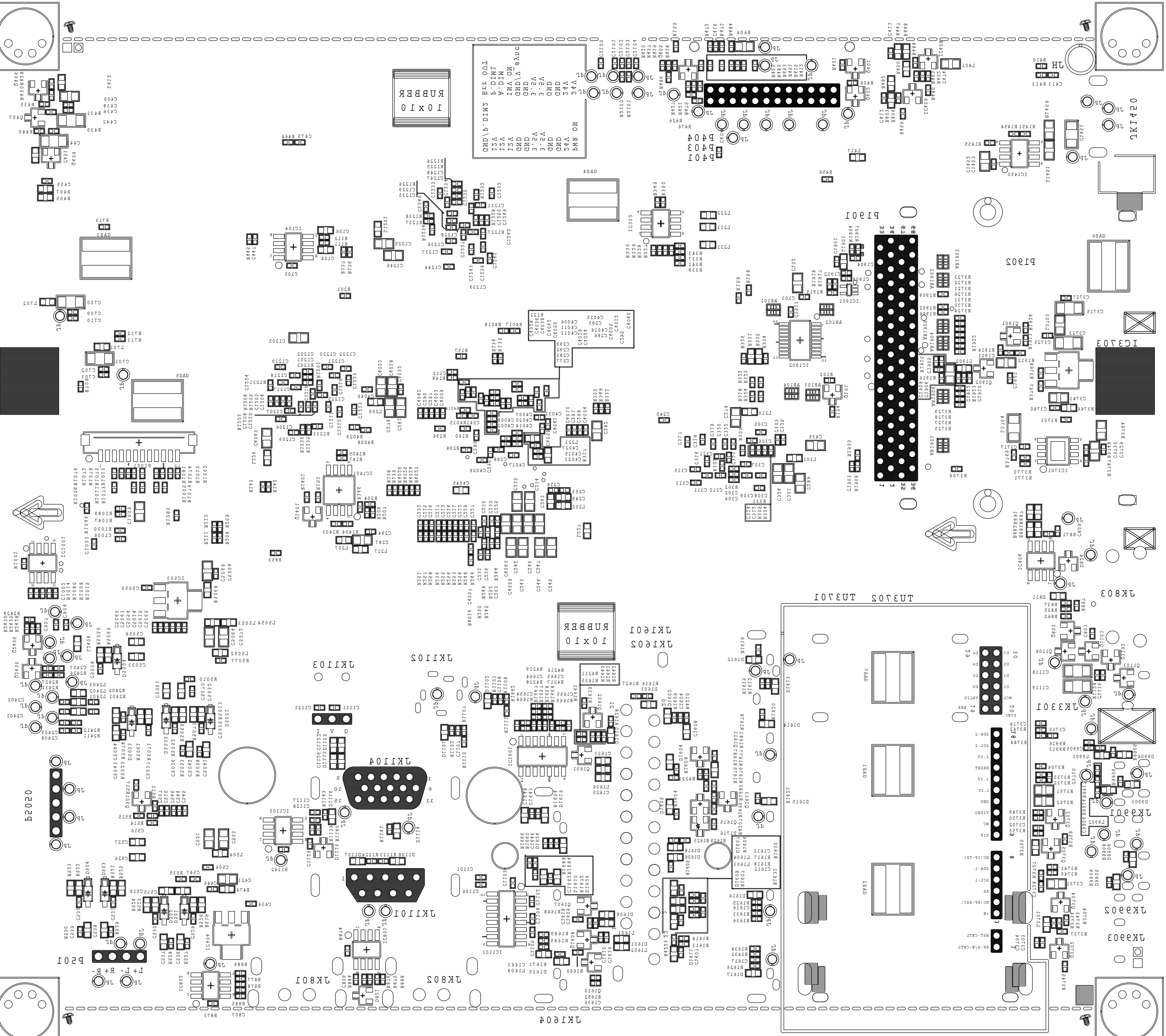
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	L/DIM_LED	SHEET	21

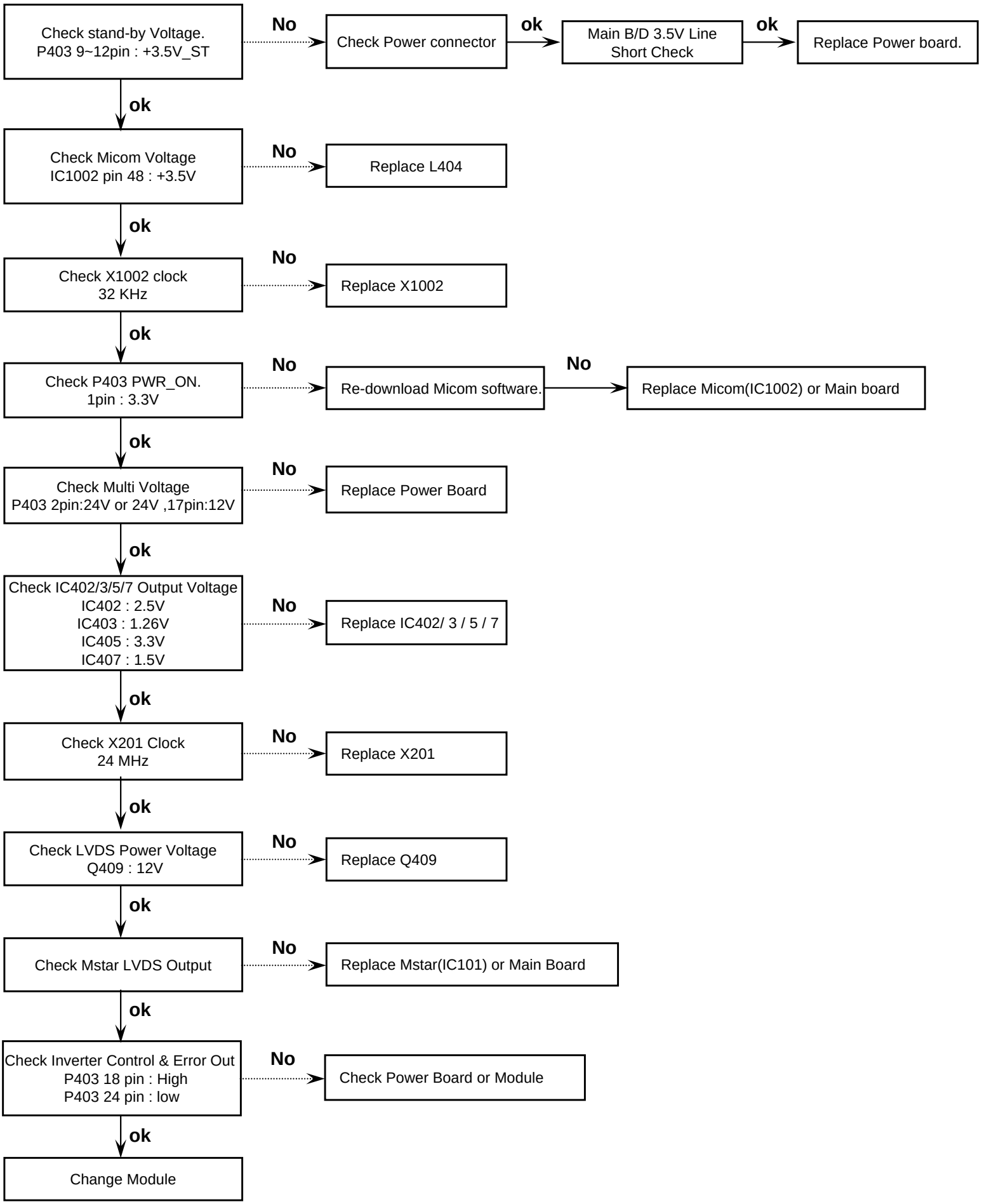

P2100
BAR CODE
BAR CODE
SOFTWARE LABEL
NON-REVERSE
NON-REVERSE
P704
P703
P705
IC1201
IC1202
IC101
IC1102
IC301
P1901 JK1450
P1902
Pb Free Soldering
L*01U (* : A,B,C,D,J.L.T)
EAX63529602(1)
2010.11.20. H.Y.D
JK803
JK3301
JK9901
JK9902
JK9903
JK1103
JK1102
JK1104
JK1101
JK801
JK802
JK1604
JK1601
JK1602
JK1603
P5050
P5501
P2401
P2402
TU3701 TU3702
SCL
SDL
GND
KEY1
KEY2
+3.5V
GND
LOGO
IR
GND
+3.3V
BUZZ
R- R+ L- L+



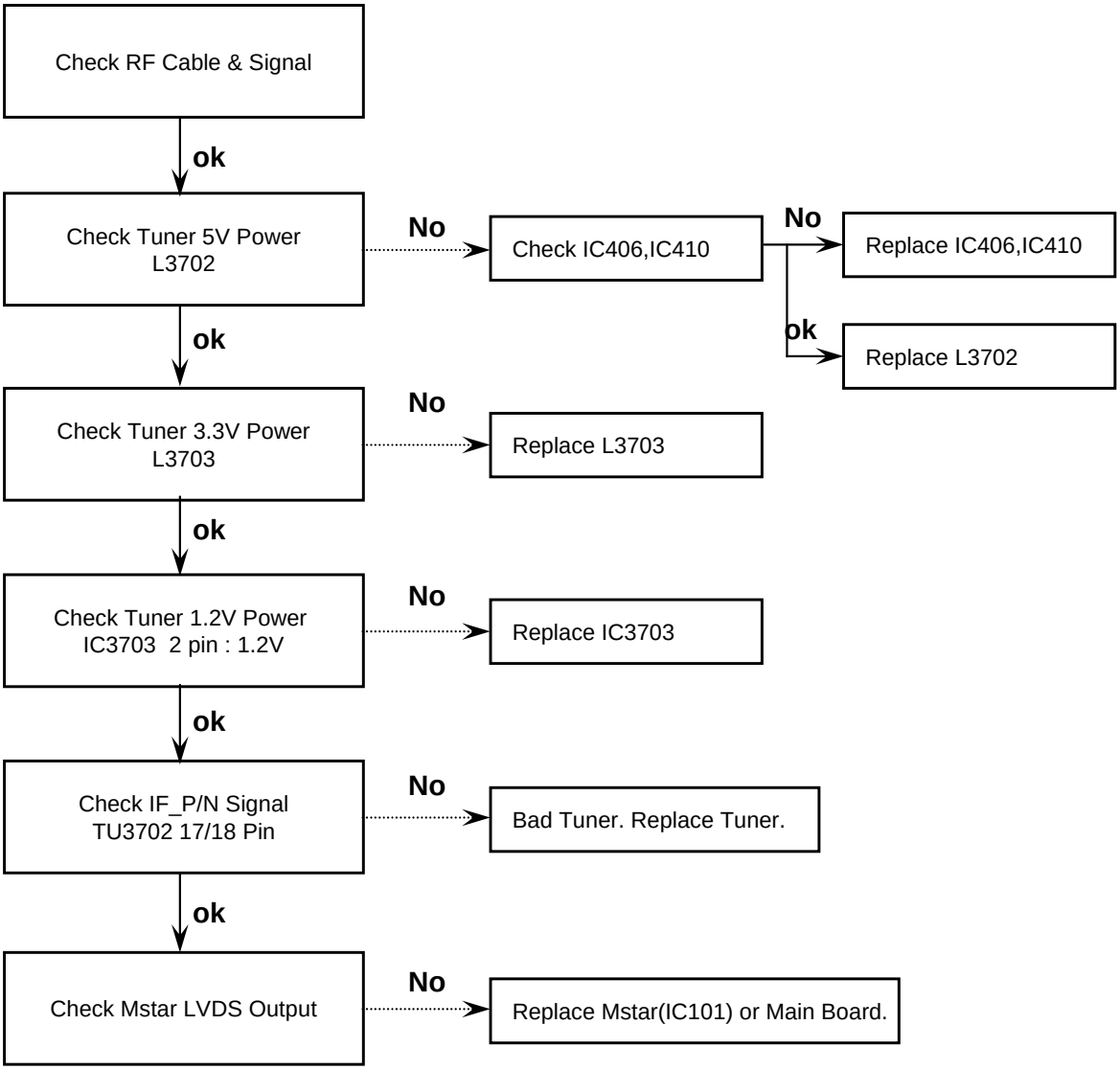
RUBBER
10x10
P404
P403
P401
P1901
P1902
IC3703
JK1450
JK803
TU3701
TU3702
JK1601
JK1602
JK1103
JK1102
JK1104
JK1101
JK3301
JK9901
JK9902
JK9903
P2020
P501
JK801
JK802
JK1604


LG Electronics Inc.

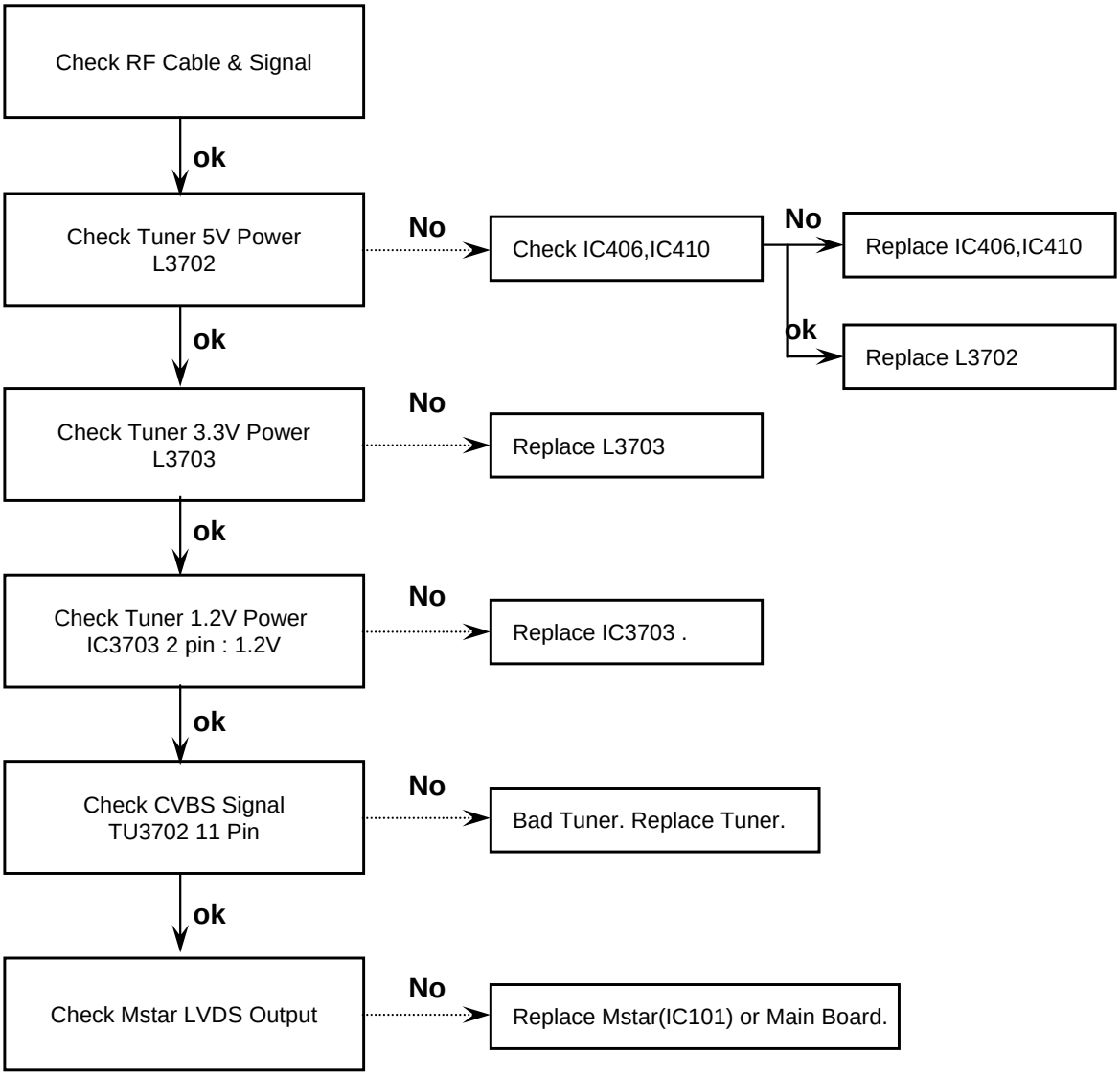
1. Power-up boot check



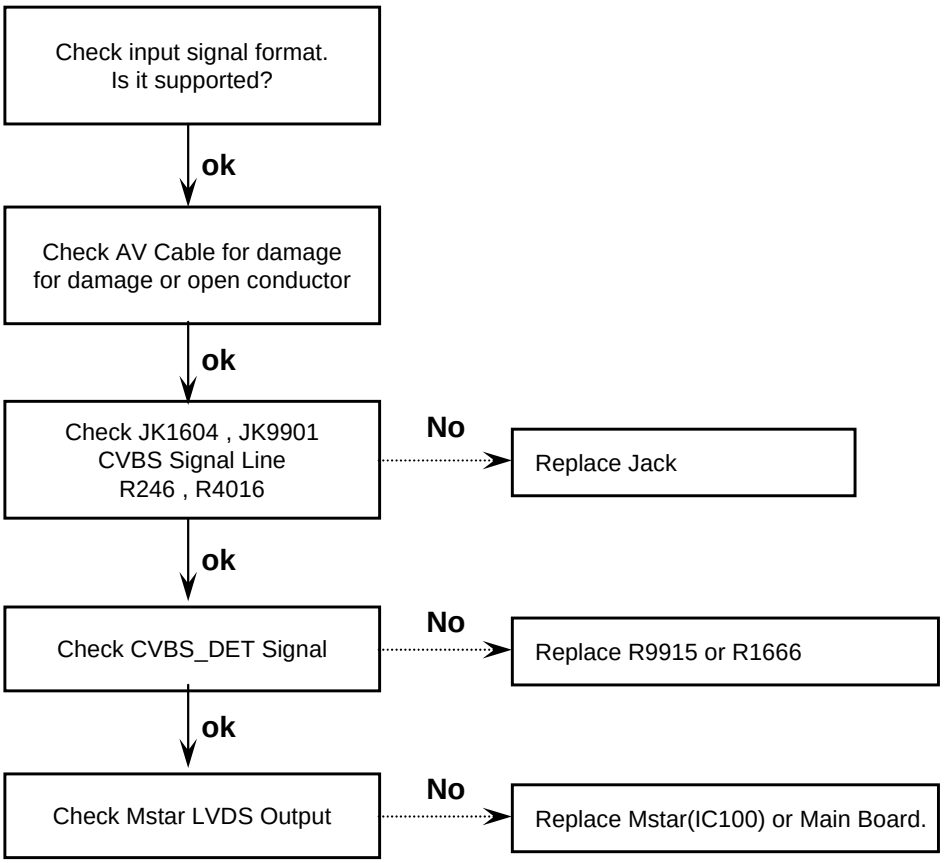
2. Digital TV Video



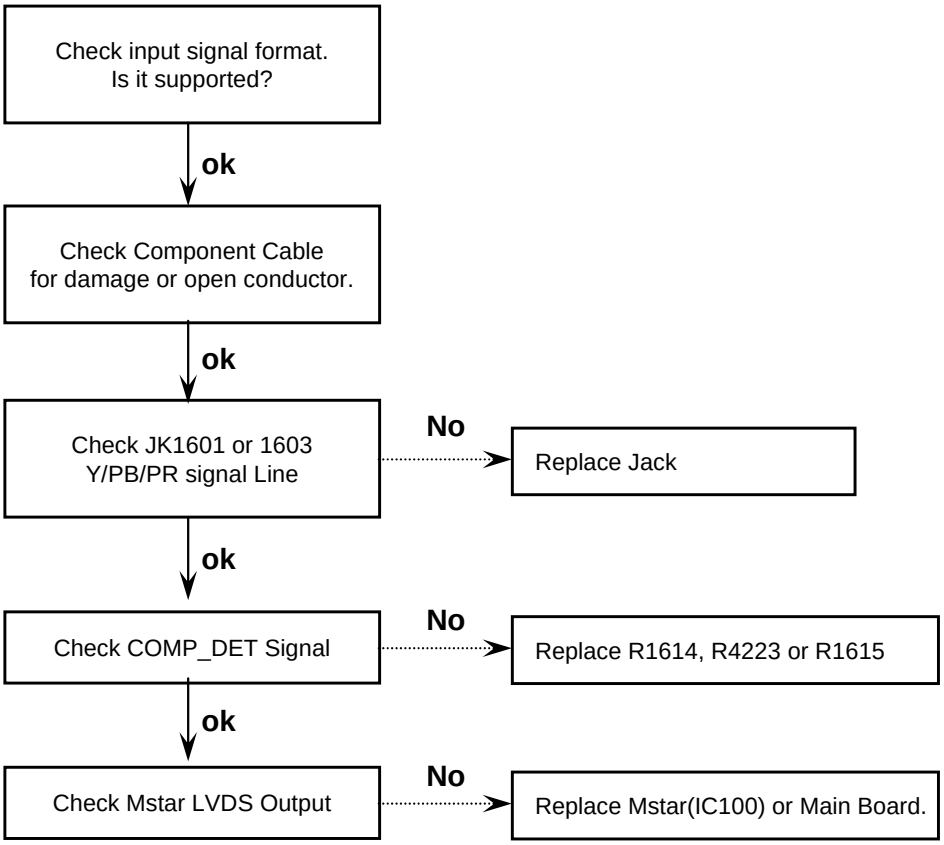
3. Analog TV Video



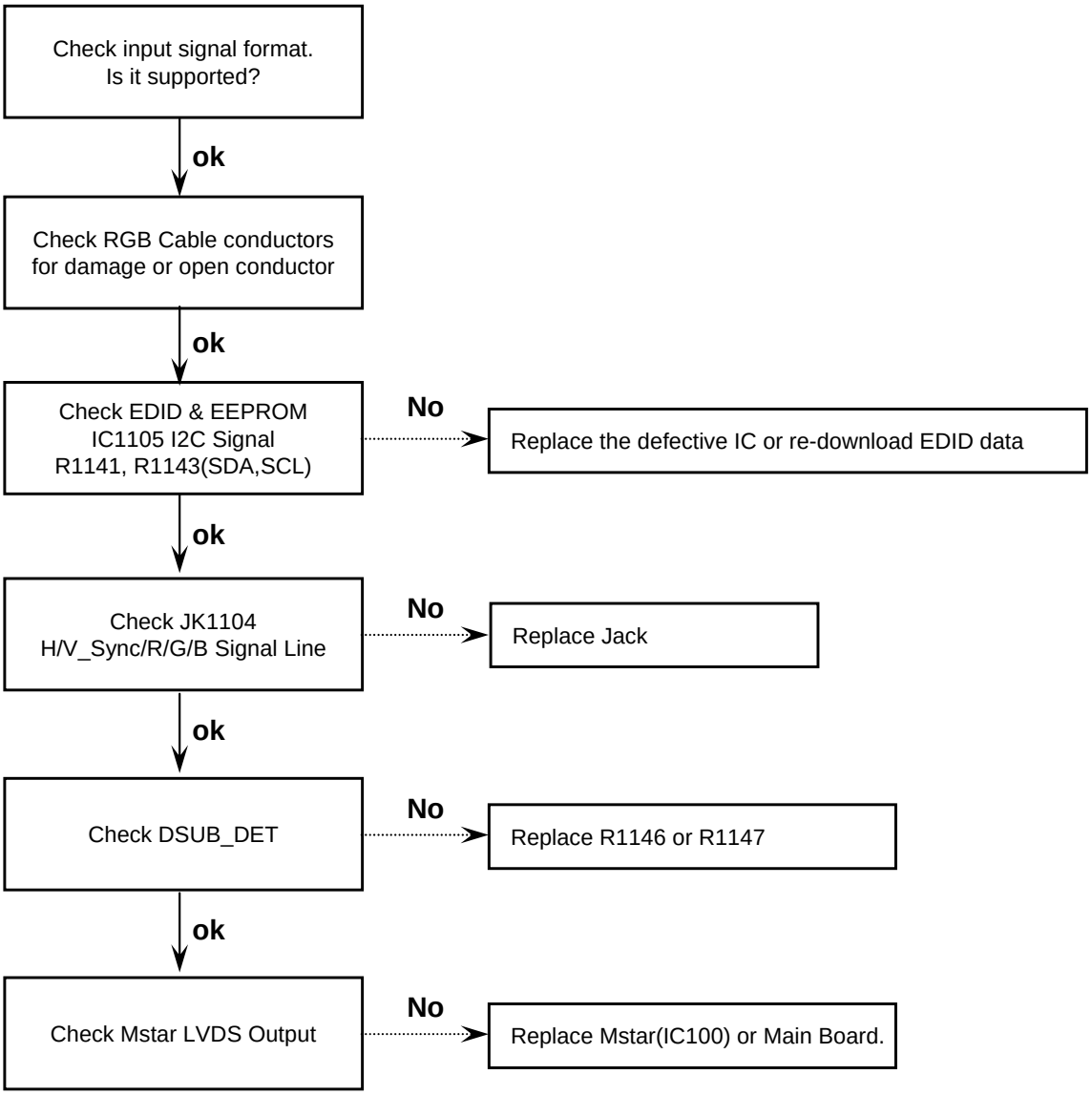
4. AV Video



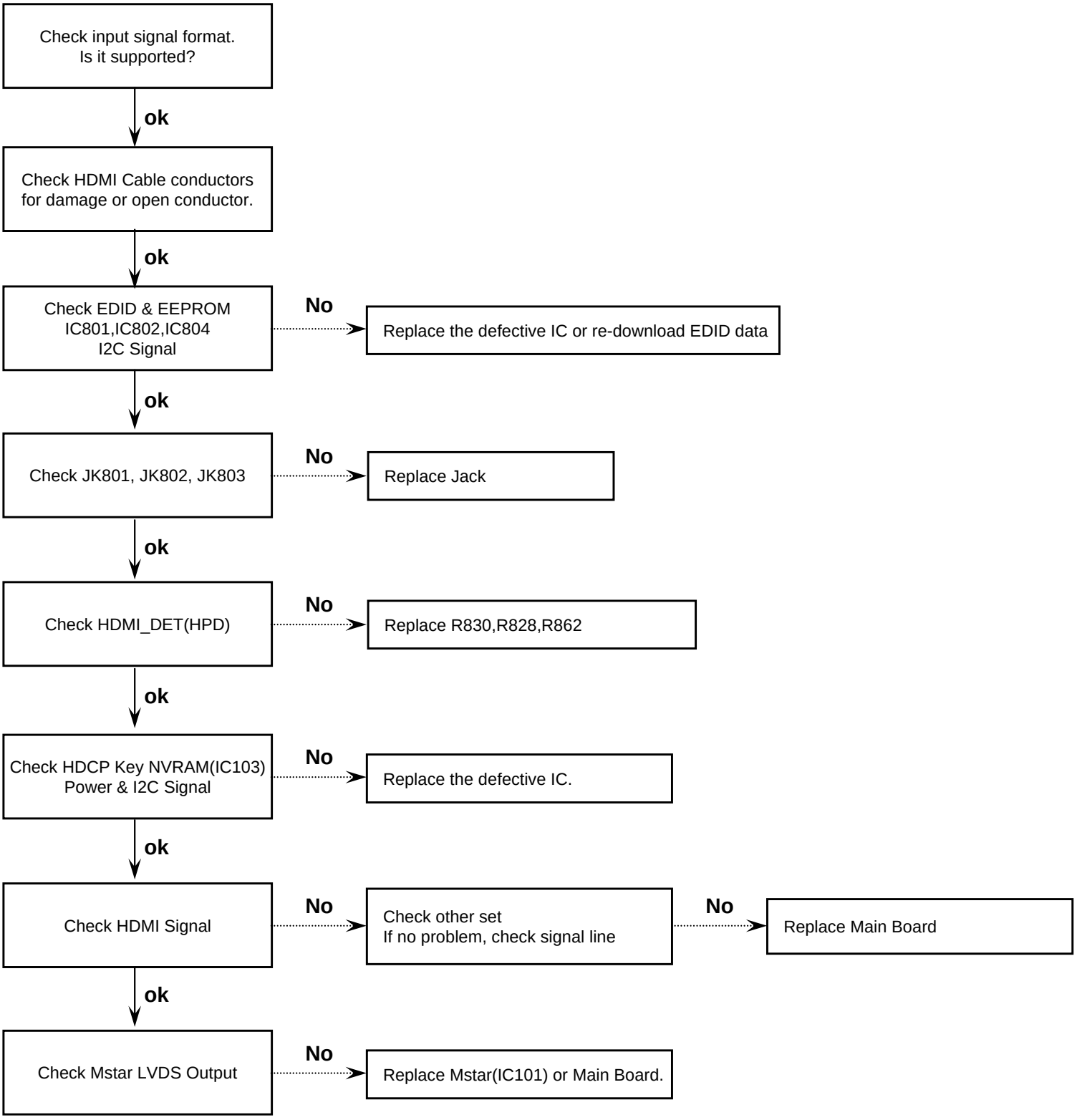
5. Component Video



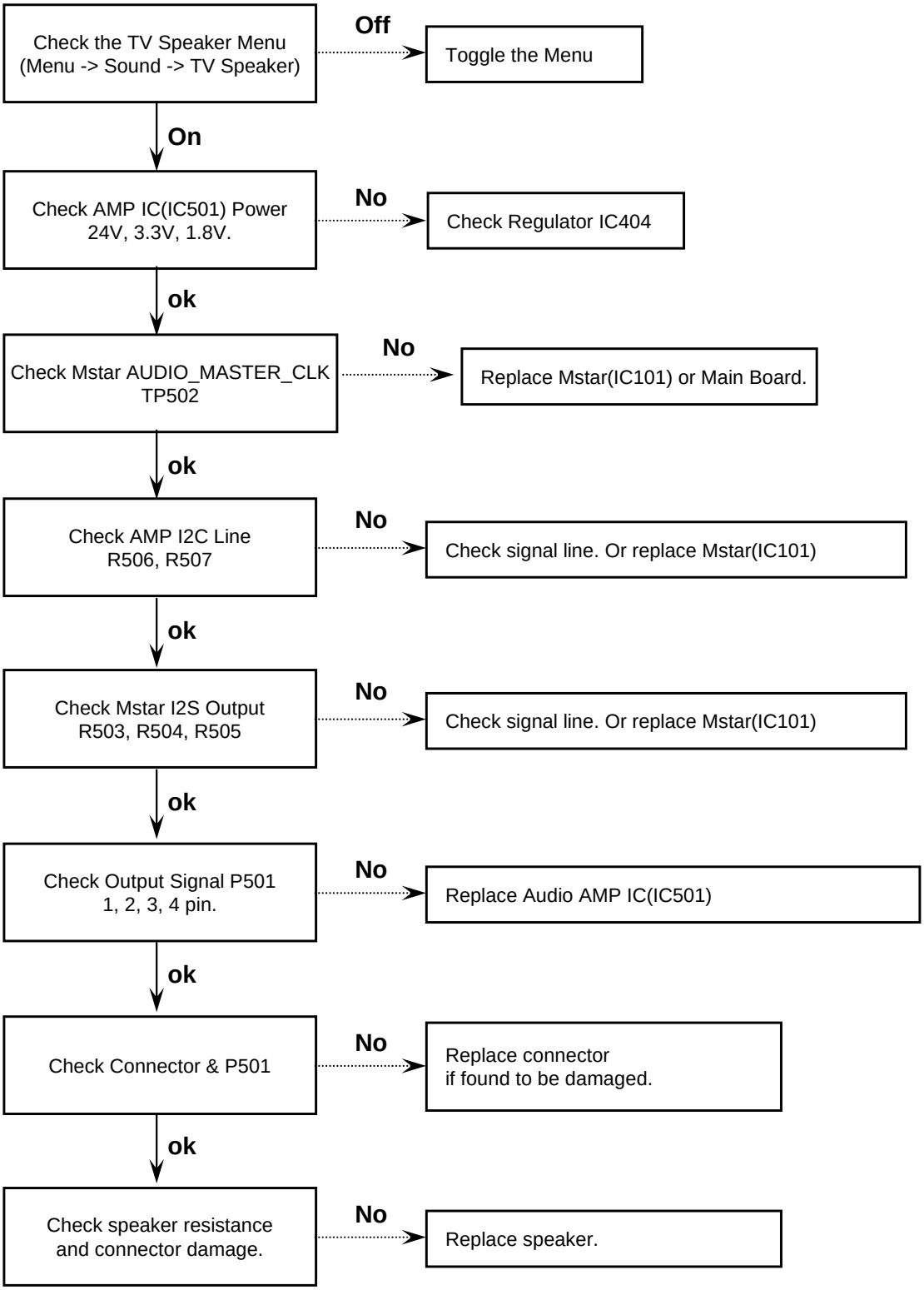
6. RGB Video



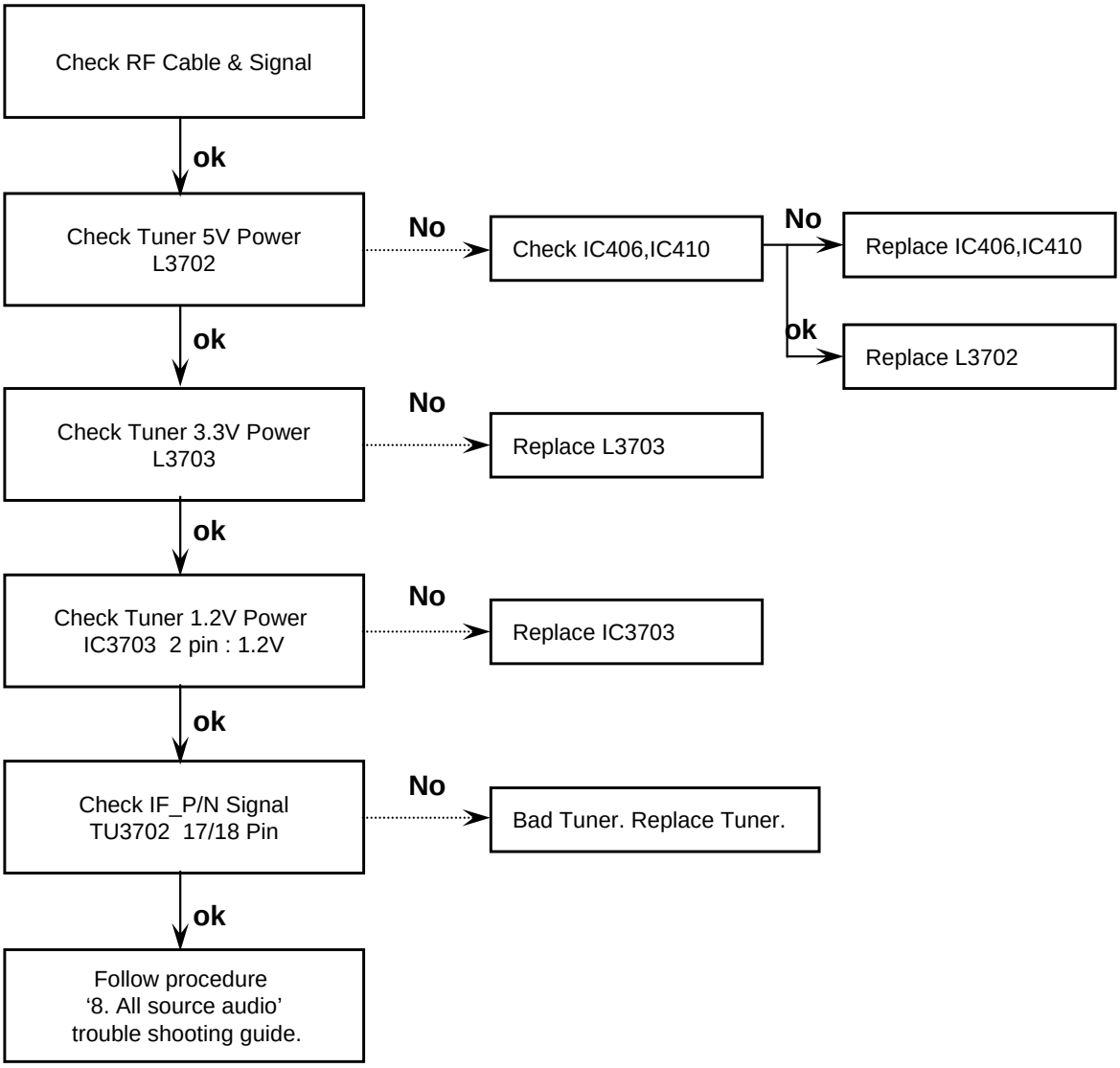
7. HDMI Video



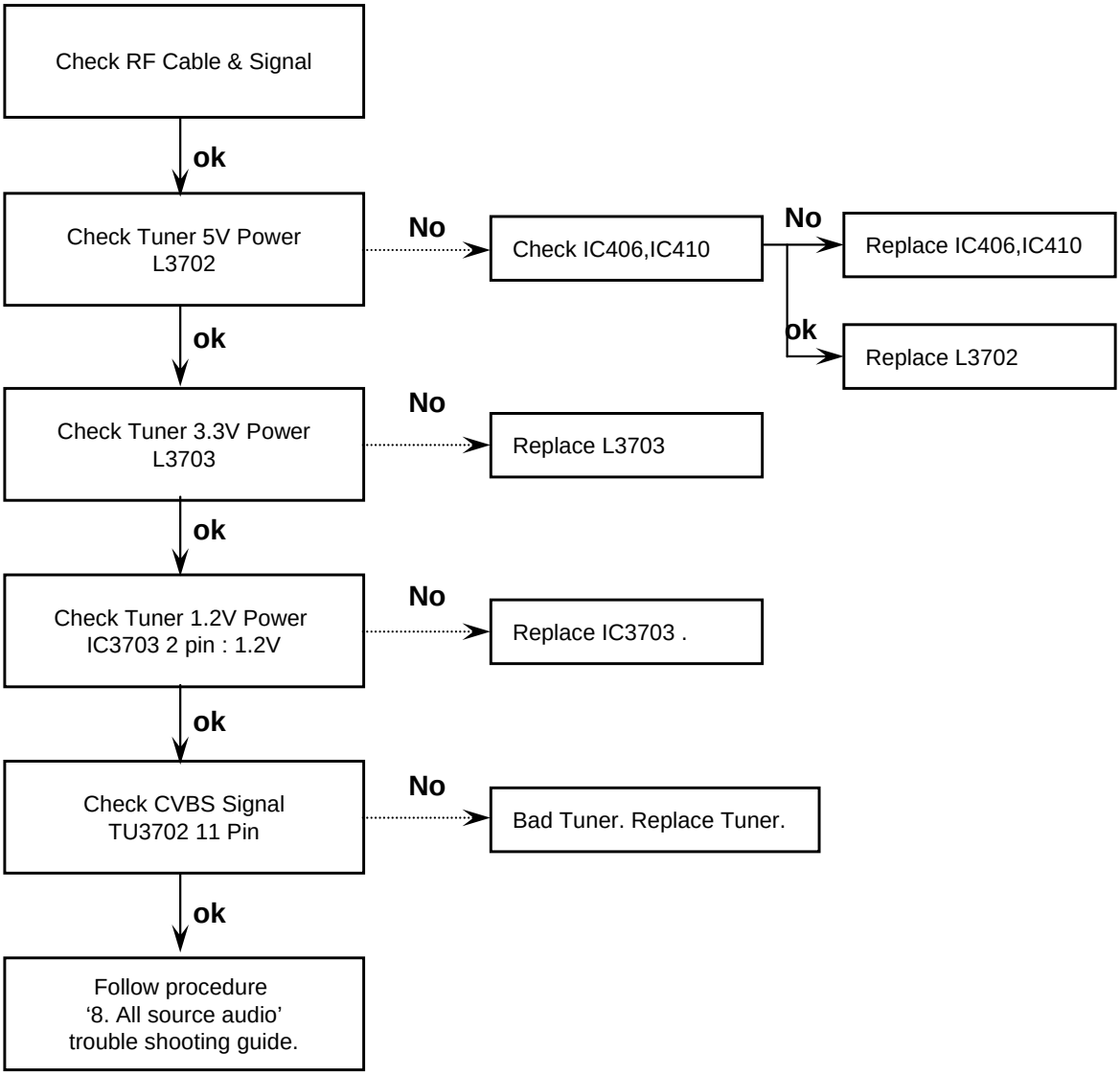
8. All Source Audio



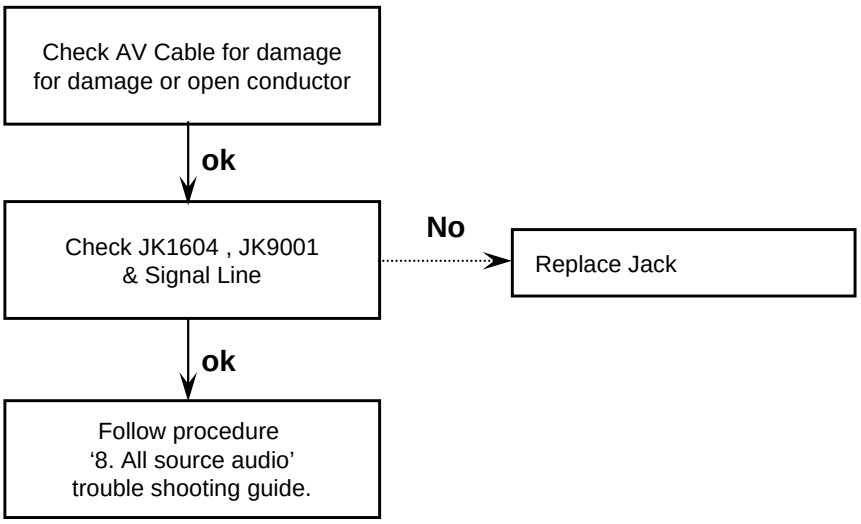
9. Digital TV Audio



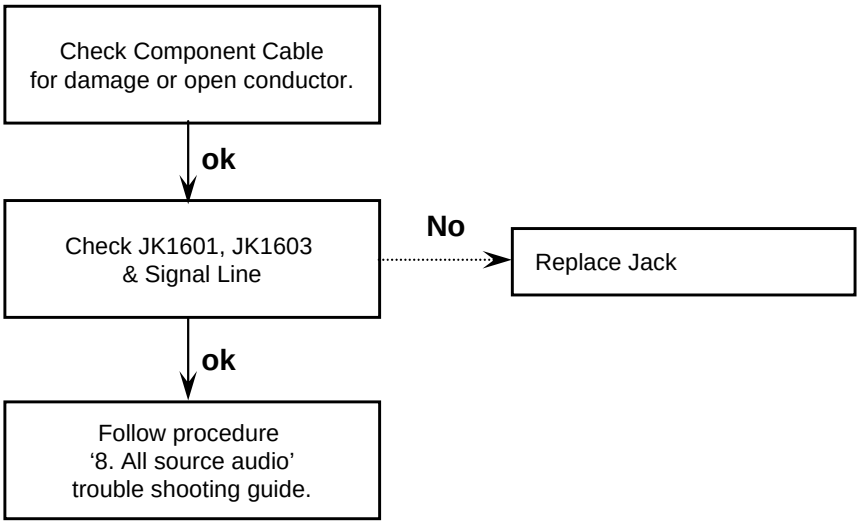
10. Analog TV Audio



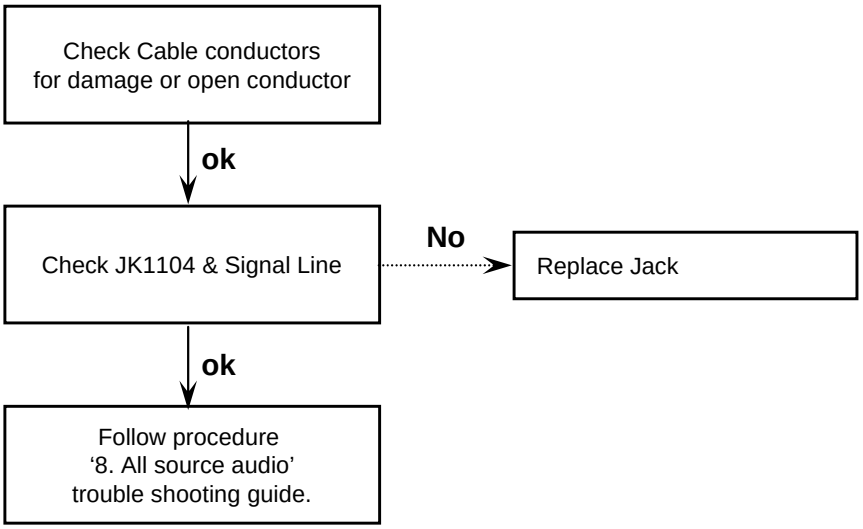
11. AV Audio



12. Component Audio

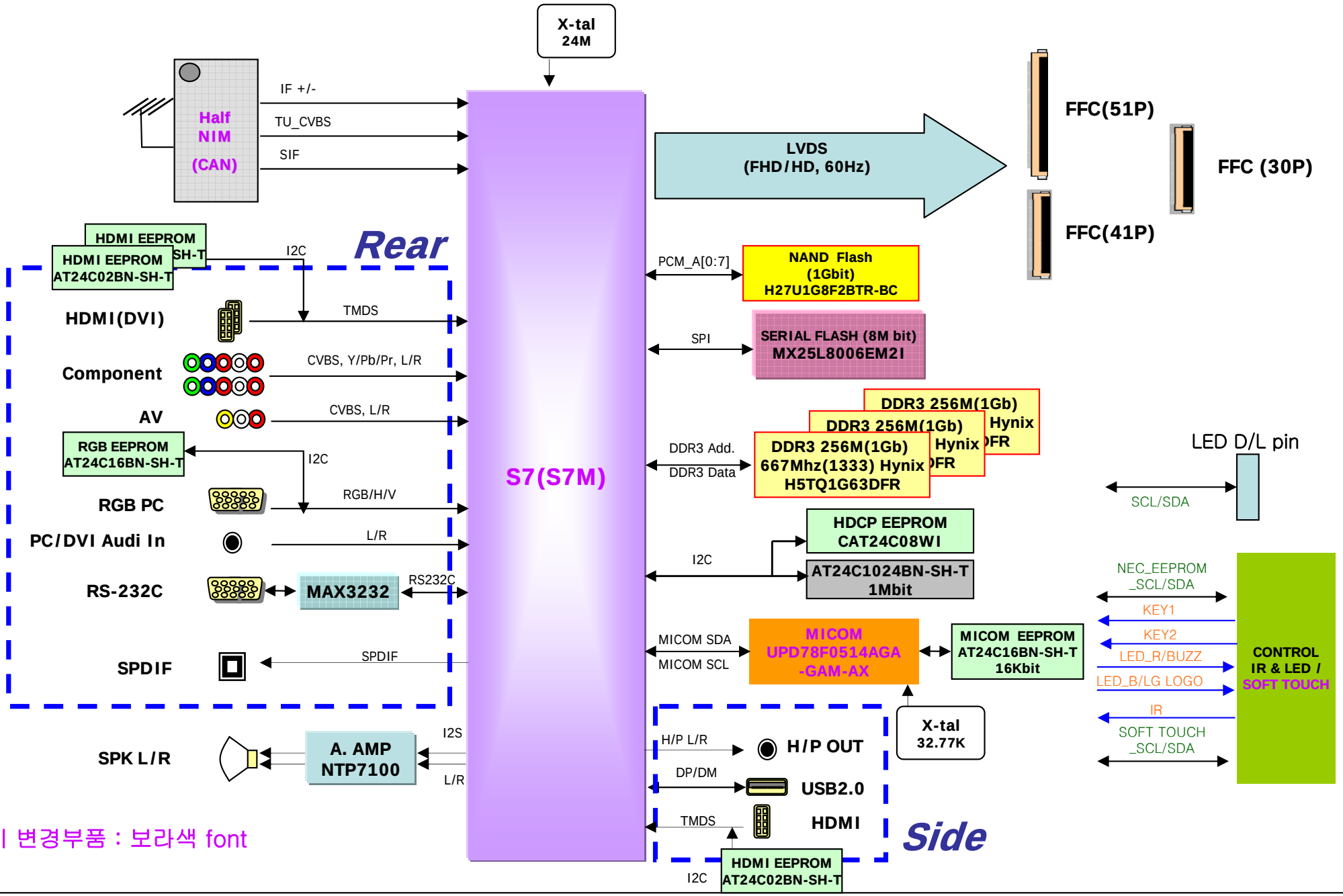


13. RGB Audio



GP3 Carry Over 모델 Block Diagram

LG Electronics/ LCD TV 연구소
연구 1실 / AT1 그룹



※ GP2 대비 변경부품 : 보라색 font